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ABSTRACT

This staff development kit is the second in a series designed that provides school-based staff development activities. The first kit contains materials, activities, and suggestions to help faculty with early efforts to implement the middle school concept. This kit provides various tools and techniques to improve the quality of teachers' questioning and discussion techniques, thereby improving student learning. The kit includes six components: (1) building a readiness (four articles encouraging teachers to reflect on existing practices, presenting positive classroom experiences, and serving as background reading); (2) discussion (four activities providing proven tools and techniques for use in the classroom to stimulate effective discussion); (3) questioning (four activities to improve students' critical thinking through applying the art and science of questioning); (4) audience participation reports (six types of reports that ensure audience participation with students taking the lead); (5) reflecting on lessons learned (helping teachers assess how they perceived the kit's content by reflecting on personal experiences with activities using prompts given on the form); and (6) posttest (an instrument that requires teachers to apply their knowledge of the kit's contents using Bloom's Taxonomy as a format for responses). Resources for school-based staff development are included. (SM)

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ED 453 196

STAFF DEVELOPMENT KIT #2

NMSA

How to Improve Discussion and Questioning Practices: Tools and Techniques

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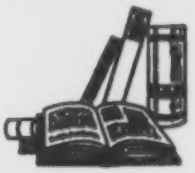
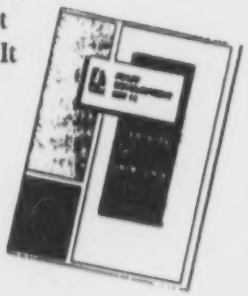
Resources for School-Based Staff Development

NMSA has many resources to meet the need for staff development materials that can be used by teachers, teams, and faculties. While state and national conferences, institutes, and workshops are valuable, middle level educators cannot depend on such "outside" efforts; instead, school-based activities focusing on local concerns, ones that meet recognized needs of particular teachers, teams, or faculties must be more commonly used. Furthermore, many professional growth activities can be conducted in already scheduled team planning time – teaming should mean growing together professionally as well as teaching collaboratively. Faculty meetings can also be structured as professional development experiences, and with appropriate materials teachers can carry out many activities on their own time.



This staff development kit is the second in a series recently launched by NMSA. Designed for use in school-based staff development activities, this kit-in-a-book can be used by individual teachers, teams, or even by a small faculty. Everything needed is included, making the kit a true "do-it-yourself" staff development experience.

The first kit, *Implementing the Middle School Concept: Middle School 101,* contains materials, activities, and suggestions to assist a faculty in early efforts to implement the middle school concept. It is equally applicable for any school serving young adolescents. It is also an excellent resource for use by teachers new to a middle school. A third kit, scheduled for release in 2001, will assist teams and/or faculties who want to introduce student-led conferences. Several additional kits will be published in 2001.



Another new resource especially useful in local staff development activities is the audiotape series. These brief, studio quality recordings by well-known educators on essential middle school topics are effective for use in common planning periods, as discussion starters in faculty meetings or study groups, or for personal use while commuting or working out.

These and the many other NMSA resources especially suitable for school-based staff development activities are listed on pages 72-74.

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Initiating the Study

This self-help staff development kit will provide you as a teacher and team member with an assortment of tools and techniques that will improve the quality of your questioning and discussion techniques and thereby improve students' learning. Most classroom instructional time involves dialogue, discussion, and questioning activities designed to teach content and provide application of skills. All too often, however, these experiences are so teacher-directed that they do not promote or encourage student interaction, two-way communication, or open-ended responses.

This kit will counter the above generalization. It is comprised of the following components:

1. **Building a Readiness:** Four articles that will encourage you to reflect on existing practices, present positive classroom experiences, and serve as background reading, all to build a readiness to engage in the activities to follow.
2. **Discussion:** A set of four activities that will provide you with several proven tools and techniques for use in the classroom to stimulate effective discussion. Each activity includes some basic information on the tool or technique, directions for implementing the activity that will provide practice or application of the tool or technique, and some way to measure your success in using the activity.
3. **Questioning:** The four activities in this component will improve the critical thinking of your students through applying the art and science of questioning. As in Component II, the activities are similarly organized.
4. **Audience Participation Reports:** Using the six different types of reports described in this component will ensure audience participation with students taking the lead.
5. **Reflecting on Lessons Learned:** Through this component you will be able to assess how you perceive the kit's content through reflections on personal experiences with the activities by using prompts given on the form.
6. **A Post-Test:** This instrument requires you to apply your knowledge of the kit's content using Bloom's Taxonomy as a format for responses.

Since the activities in this kit usually call for application in the classroom, completing the kit will require some time. It is essential, therefore, that you maintain a portfolio/journal that contains student work samples, responses to the feedback activities, and other artifacts and reactions that will document and demonstrate how effective the tools or techniques were when implemented in your classroom.

I. Building a Readiness

ACTIVITY 1: Read and React

The article, "What Students Say About Common Teaching Practices" (pp. 4-9) is an excellent starting point. If the kit is being used by a team, every team member should read and react to this basic article. Each team member should take notes, identify points of agreement, and be prepared to share impressions.

ACTIVITY 2: More Food for Thought

If working as an individual, you will need to read and react to the three articles on pp. 10-26. If working as a part of a team, different individuals may read different articles and share their findings. Below are three ways of tapping fully the ideas contained in these articles.

(1) Read the article carefully and then answer the following questions:
- What is the author's primary purpose in writing the article?
- What major points does the author make on the topic?
- Does the author cite any research in presenting his/her ideas?
- Do you generally agree or disagree with the author's position?

(2) After skimming the article, go back and compile a list of facts and a list of opinions for the article. Use these as springboards for conducting a discussion on the article.

(3) After reading the article thoughtfully, write a series of journal or learning log entries to ponder the ideas presented in the article. Consider entries such as these:
- Your reaction to a paragraph or section
- Your summary of information from a paragraph or section
- Your reactions to the table, figures, data, and research used
- What you wish the article would have included that it did not
- What you felt as you read the information
- Questions you have after reading the material

ACTIVITY 3: Start a Portfolio/Journal

Decide on a way to maintain a functional record of your study of discussion and questioning practices and their application in your classroom. This combination portfolio/journal will be a resource to return to from time to time as well as the basis for your summary conclusions. A manilla folder and a notebook may suffice, or perhaps a pizza box to hold the many materials that will result from classroom applications, feedback activities, and your reflections. Whatever works for you or your team is acceptable.

What Students Say About Common Teaching Practices

Margaret A. Theobald

Using a variety of teaching strategies is not just nice, it is necessary for optimizing student learning. Precious few students learn best from an abundance of teacher talk combined with endless blanks to be filled in. Simulations, discussions, problem-solving tasks, and computer-assisted instruction all have a role to play in middle school classrooms. However, has anyone asked, and then listened to, students talk about their views of various instructional strategies? Yes! Read on to see what students think about the learning options to which they are exposed.

For years, an emphasis on different teaching strategies for young adolescents has been advocated (Gilstrap, Bierman, & McKnight, 1992; National Middle School Association, 1982; Scales, 1992; Wood, 1991). Young adolescents require a distinctive kind of education program and an environment that is unlike that of either the elementary or the high school (Faunce & Clute, 1961; George & Alexander, 1993). Teachers can control how teaching is conducted in their classrooms. However, experts (Faunce & Clute, 1961; Gilstrap, Bierman, & McKnight, 1992; Johnston & Markle, 1986; Lounsbury & Clark, 1990; National Middle School Association, 1982; Wood, 1991) have registered concerns about the choices teachers typically make. Now students have their say about the instructional strategies that they encounter daily.

Background

Instructional strategies used at the middle level should be selected with the learning needs of young adolescents in mind. For example, the importance of peer relationships dictates the use of teaching methods that capitalize on peer interaction (National Middle School Association, 1982). The challenge of promoting intellectual growth from simple to complex thought, from concrete to formal operations, requires experiences that stimulate these processes in young adolescents. The physical need for movement dictates the need for activities allowing students to be physically active. Especially important for middle school students is that teachers capitalize on students' natural desire to talk and work with peers.

The students

A convenience sample of seventh graders was chosen to be surveyed. A small urban school (town population about 30,000) and a medium-sized urban school (city population about 60,000) were the settings. Of the 355 seventh graders in the small urban setting, 2% were minority (most were African American) and almost one-third were on "free lunch." This school is the only one in the district that serves seventh graders. A total of 64 students from two teams were surveyed for this study.

The other urban school had a 6-8 configuration to house some 800 total students. Twenty-five percent were minority (most were African American) and almost 23% of the total population was on "free lunch." This school was one of two schools in the district serving students in grades 6, 7, 8. At this school a total of 91 students from two seventh grade teams were surveyed. The total sample of 155 seventh graders from the two schools included 79 males and 76 females. Age distribution was as follows: 12-year-olds, 86; 13-year-olds, 62; and 14-year-olds, 7.

Survey summary

Seventh grade students were asked to rate and explain the reasons for their ratings, each of seven basic instructional strategies commonly used by teachers: *Lectures* (teachers talk all or most of the time), *Discussions* (teachers have students talk with the teacher and/or with other classmates on a specific topic some or most of the time), *Questioning* (teachers ask questions in class some or most of the time), *Games & Simulations* (teachers use games and/or competition and sometimes set up almost "real" situations), *Problem Solving* (teachers set up a situation and let students figure out how to solve a problem), *Skill Practice* teachers give time in class

Table 1: Percent and mean for each given strategy across the range of responses from *really like, like, dislike* and *really dislike*

	Really Like (1)	Like (2)	Dislike (3)	Really Dislike (4)	X Mean
	%	%	%	%	
Games & Simulations	61	33	3	4	1.50
Media	38	36	13	13	2.01
Discussion	17	65	11	8	2.10
Skill Practice	23	44	18	15	2.25
Problem Solving	10	43	25	23	2.61
Questioning	8	41	32	19	2.61
Lectures	3	25	50	22	2.92

for students to practice skills taught in class), and *Media and Visual Aids* (teachers use films, filmstrips, record players, overhead projectors, videos, blackboards, charts, other equipment).

Table 1 indicates the student ratings for each instructional strategy. Students indicated that they "really like" games & simulations. They also "like" various media. Students indicated positive attitudes toward classroom discussions and skill practice. However, slightly negative opinions were recorded about both questioning and problem solving. A real "dislike" was registered toward lectures.

Merely rating each strategy was incomplete without providing a rationale for the rating. Therefore, students were asked to explain reasons for the ratings they gave. Their reasons were organized into five categories: Helpful, Boring, Fun, Stressful, and Interesting. Lectures were regarded foremost as *boring* yet somewhat *helpful* as well. On the other hand, games and simulations were *fun* and *helpful*. Discussions were regarded as *helpful* and *interesting*. In contrast, skill practice was viewed as *helpful* but *boring*. Questioning was thought of as *stressful* yet *helpful*. In addition, problem solving was regarded as *stressful*. After *stressful*, problem solving was seen in almost equal proportions as both *helpful* and *boring*. Finally, the media got very mixed reviews from the seventh graders. Although media had been ranked second only to games and simulations in popularity, the most frequent modifier of media was *boring*. This descriptor was closely followed by *fun* and then *helpful* (Table 2).

Student comments

What may be most helpful to teachers were the actual comments and suggestions made by students. Students participating in the study were told that this was their chance to tell teachers everything they always wanted to about instructional strategies that teachers use in the classroom.

The following suggestions were supplied by students when asked to address "Things you would like to say to teachers about [a specific strategy] in the classroom":

Lectures. Although students said that lectures help explain the lesson and sometimes students might learn something new, they expressed dislike because lectures can be long, boring, information is sometimes old, and students have to stay still for too long. Therefore, students suggested that teachers should

1. Keep it interesting so students want to learn
   Spice it up
2. Keep it short
3. Many times we already know it. Find out what we know first
4. Use video material
5. Include audience participation

Discussions. Students said that discussions can sometimes be boring and they often get too lengthy. The critical comments that "teachers don't really listen to what you say" and that "there's no real time to say what you want if the teacher talks too much" should provoke reflection by teachers. What students

Table 2: Percent and categorical identification of open-ended responses

	Lectures	Discussion	Questioning	Games & Simulations	Problem Solving	Skill Practice	Media
	%	%	%	%	%	%	%
Help	27	41	32	28	22	41	27
Boring	73	22	17	12	21	23	36
Fun	3	14	5	73	14	6	31
Stressful	2	12	53	5	37	11	1
Interesting	5	34	3	3	12	19	8

really like about discussions is that "You can say what you feel instead of just listening." They indicated discussions were helpful, especially with tests and that discussions are interesting because you can learn and hear what others have to say. Students suggested that teachers

1. Keep it interesting
2. Listen!
3. Get all sides of an issue
4. Give students more time to talk
5. Stay on task
6. Focus more on what students think about it

Questioning. Students indicated that they disliked questioning strategies because they can be stressful. "People laugh if you're wrong." It's embarrassing if you don't know the answer. "When you don't know the answer, the teacher gets angry because you don't know." "When you don't understand the subject, you don't understand the questions."

Though students expressed many concerns regarding the use of questioning, students did state that questioning can be a good learning process; "helps you learn for tests." "Helps you understand and realize what you know and don't know." Students said "You know the answer and you're proud of yourself." Students suggest that teachers

1. Use discussions instead of questions
2. Don't overdo it!
3. Stop!
4. Don't ask hard questions
5. Don't call on kids without hands up
6. Call on different kids

Games and Simulations. Students said that games and simulations were fun, helped them understand and learn about "real" things, and allowed for competition. Yet, students expressed a dislike when the use of this strategy was "over our heads." The competitive angle was a concern because students said they disliked the strategy because "Some people get mad when they don't win." "Sometimes you lose and feel bad." Students suggested that teachers

1. Use more often
2. Don't let sore losers play games
3. Challenge us
4. Keep on our level

Problem Solving. Students indicated that problem solving "makes you think," "helps when you don't understand," and "makes you feel smart." Yet students expressed a real dislike for problem solving because "Sometimes it's too hard… makes you give up if it's too hard." Students also said they can get upset and discouraged and dislike problem solving "When you just can't figure it out." Students suggested to teachers that

1. If you do this, then help students!
2. Make solutions reachable
3. Make more challenging

Skill Practice. Students like skill practice because it "helps you understand what the teacher is talking about." "…helps you learn by working on your own." "Sharpens my skills." "You get to practice what you learned." "In class, the teacher can help explain it." The only concerns that students expressed about skill practice were that it "can be hard and frustrating if you get lost," and that "it's boring when we know it and do it over and over." Students suggested that teachers

1. Don't overdo it
2. Use it in class for less homework

Use of Media and Visual Aids. Surprisingly, students seemed to be ambivalent about this strategy. Though students said it was "fun!" and that it "helps to see if you picture what it should be," students also said that it "uses up time" and it's "boring, old, and can't relate." "Some are stupid." "Takes too long to set up." Students had only two suggestions for teachers:

1. Get up-to-date material
2. Give choices on viewing or not

Implications

This study was initially conducted to find out students' perspective on seven basic instructional strategies. From these perspectives, 28 implications for practice have been derived.

Lectures

1. *Keep it short.* Provide necessary input then shift to student participation, back to teacher, back to students, varying the time shifts. Students indicated lectures were too long.
2. *Spice it up.* This was a common suggestion from the students. Use a film or other medium to stimulate interest and break up a "talking spree" on the part of the teacher.
3. *Get students involved.* Provide some means for student input at various levels. Inquire about how students feel or what they are thinking on the topic. Students said they don't get to say anything. This was a major reason for disliking lectures.
4. *Have students help prepare a lecture.* Include students in the preparation of a lecture on a given topic. Brainstorm (use an overhead, blackboard, or posterboard) then allow students to organize ideas and information, research that material, then contribute to the class on another day. Students indicated they wanted audience participation. This activity will put them right in the middle of things.
5. *Shift the focus.* Begin what otherwise might be a teacher-centered lecture and turn it into a student-centered activity by asking a question that poses a problem. Use the lecture to help unfold the resolution of the problem. Use continuous involvement of students to help arrive at the solution or outcome. Students said to keep it interesting so students want to learn.
6. *Use assessment.* Use the first part of an intended lecture to assess students on knowledge of the subject. Students commented that sometimes they already know the information and what you say then becomes boring. Assessing students will let you identify students who might be group "leaders." Assessment will also let you know quickly if you ought to move forward more than you anticipated.

Discussions

1. *Listen.* Students indicated emphatically that teachers fail to listen. Appropriate feedback to students when they make a contribution to the discussion might help. Restate for the rest of the class what the student said. Keep it brief. Students also indicated they wanted more time to talk. Focus the discussion so students can talk student to student.
2. *Stay on task.* Students indicated an off-task discussion drives them nuts. Put something on the board, use a chart, an overhead, something concrete, and continue to focus on that element or item.
3. *Establish a basis for information.* Keeping a discussion interesting may mean using various ways to keep students involved. To successfully participate in a discussion, students need information. They can find this information or otherwise share this information with each other in smaller groups before participating in a large group discussion. Sharing attitudes, thoughts, and opinions in small groups first allows for more student involvement and gives students more time to capitalize on a student's basic desire to talk.
4. *Maintain neutrality.* Accept that there may be differences of opinion and acknowledge that. Students indicated that teachers should get all sides of an issue. Sometimes unresolved issues teach students to ultimately accept differences in one another. Discussions can cement acceptances.

Questioning

1. *Be ready.* Prepare some questions you might ask students ahead of time. Given the nature

of the students in your class, you can check your questions for appropriate taxonomy levels. Students indicated questions were sometimes too hard. On the other hand, students indicated some questions asked by the teacher were dumb.

2. *Use positive questioning.* Use questions as an assessment tool. Students said questioning gets boring. Turn questions into a tool for letting students express what they know.
3. *Let students ask questions.* Have students come up with questions to ask each other. This might help students become more confident in answering the questions of others.
4. *Take time.* Pay attention to student responses, give students time to process their answers, then time to express them.
5. *Emphasize that contributing is important.* Create an atmosphere in your classroom so that calling on students to respond does not become stressful. Peer acceptance and approval is important, and students expressed a dislike for questioning if they are embarrassed when they do not know an answer or give the wrong response. Reinforce acceptance of the idea that learning can occur from incorrect or incomplete answers.
6. *Use reinforcement techniques.* Reinforce responses by eye contact, smiling, using a friendly tone, nodding your head, or in some way acknowledging a student's attempt to respond. This will indicate to students that you are listening. Be sure to avoid "cutting-off" a student's response.

Games & simulations

1. *Use more often.* Some students indicated they liked this strategy because they "learn about 'real' things." When students can relate what they learn in school to life, they are more motivated to learn.
2. *Prepare.* Always check out games ahead of time. Be sure they truly are at a level that will, as students indicated, challenge them. This will alleviate the frustration of games being over their heads, or at the other extreme, boring. And, who said everyone in the class has to play the same game at the same time?
3. *Reinforce participation.* Young adolescents like a challenge and competition. However, to avoid the suggestion of not letting sore losers play, you need to create an atmosphere in which both winning and losing teams are using a game to prepare for a greater challenge ahead. This may take some effort if it means adjusting the value systems of some students. You may wish to refrain from keeping score and provide positive reinforcement for participation. Games provide good opportunities to teach sportsmanship, fair play, and the chance to simply be a part of all the action.

Problem solving

1. *Provide a variety of problems.* Students indicated that they wanted problems that were more challenging. In other cases, students said sometimes problems were too hard and they get upset and discouraged when they try to solve problems. Offer more than one kind of problem, or at least one kind of problem with several variations, and let students select which ones they might try to solve. Provide enough variety so that it is possible for everyone to be successful most of the time.
2. *Be available to help.* One of the suggestions students mentioned for teachers was that if teachers were going to give out problems for students to solve then teachers should be available to help.
3. *Provide timely clues.* Some teachers provide "clues" to students at various intervals to help students in figuring out particular problematic situations. This assists in task analysis to help students stay on track and refocus during the process of problem solving.

Skill practice

1. *Say to yourself,* "A little goes a long way." Though students find it helpful to practice skills in class where the teacher can help, they also indicated that they do not want teachers to overdo it. Therefore, allow students to practice skills they may be unfamiliar with until you feel they have the confidence to continue without you, turning skill practice into something to be continued at home, if needed (see #3 following).

2. *Conduct quick assessments before assigning skill practice.* Teachers are well aware that some students need less practice than others. So, allow for those students who do not need additional skill practice, by providing enrichment activities that go beyond basic skill practice.
3. *Reconsider skill practice for homework.* Connors (1991) indicated that "Practice homework helps students master skills, but it is often boring, dull, repetitive, and unimaginative. Practice homework proves helpful only when it is used to practice and reinforce skills already learned in class" (p. 3). Students indicated that skill practice was boring when they could do it, yet were required to continue with practice exercises. Students liked skill practice in class because it meant less homework, implying that doing skill practice in class merely saved them from having to do it at home.

Using media & visual aids

1. *Preview.* Most young adolescents will turn off at the sight of a film or video that appears out of date. Be sure that what you are sharing with students is timely. For something that appears to be out of date but has a current message, prepare the students in advance.
2. *Prepare.* As much as is possible, have everything ready to go when class begins. It is interesting that students noted they disliked media and visual aids because they take too long to set up. Young adolescents want to get on with it. They do not want to waste time.
3. *Offer alternatives.* In examining the purposes for use of media or visual aids, teachers could give students some choice in viewing what might be available. Remember, not all students are visual learners, and some students might best learn and get reinforcement through other means such as reading or working with someone else. Ask yourself if it is not possible to show a film with viewers up front and independent workers in another section of the room. Or, you can arrange to have work groups in the library with some students viewing media in the classroom.

Using several teaching strategies within a class period will help more students learn effectively. By combining several strategies in a class period, a teacher can create successful learning environments that are less stressful and boring and more fun and engaging.

A teacher can be more effective by using short lectures to transfer information then moving students into a discussion that will prepare the ground work for a problem-solving situation requiring inquiry. Combining skill practices with games and simulations will help meet the needs of different types of learners. Skillful questioning used with other strategies will promote logical thinking and reasoning abilities.

Successful teachers are those who are adept at using a variety of strategies. Teachers should be encouraged to assess their own students' reactions to the learning activities used in class. Young adolescents can be very astute critics of the learning environments they experience. These students can provide valuable input, if only they are asked.

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Encouraging "Math Talk" in the Classroom

Linda B. Cooke & Verna M. Adams

Students need opportunities to talk about mathematics in the classroom! Talking about math helps students develop understanding that there is more than one way to solve a problem and increase confidence in their problem-solving ability (Bassarear & Davidson, 1992). Some educators claim that it is within the classroom discourse that student understandings take shape (Edwards & Mercer, 1987). Classroom discourse provides students the opportunity to interpret and reinterpret information, shaping it by making it salient or peripheral.

How to encourage students to communicate mathematical ideas is the topic of this article. We refer to the oral communication in the mathematics classroom as "math talk." Math talk can take place in small groups as students work together, in whole-class discussions, and in student and teacher presentations. Emphasizing math talk helps change the classroom from a place where students are dependent on the teacher for learning to a place where students are responsible for their own learning.

The ideas presented in this article are based on the experiences of a seventh-grade mathematics teacher. This teacher helps students develop their abilities to discuss their mathematical ideas and to explain why they think their ideas are valid. Getting up in front of others is particularly difficult for middle school students. They are often self-conscious and reluctant to draw attention to themselves. At the same time, they may be particularly insensitive to peers. Within an appropriately structured classroom, however, students can and do get past these difficulties.

Structuring the Classroom Environment

Setting up a classroom environment that encourages math talk requires special attention from the teacher (Ball & Friel, 1991; Vace 1993); it does not just happen – at least, not until the environment supports it. The types of thinking that become the basis for math talk need to be valued. The teacher can communicate the importance of thinking and communicating by creating posters that say "Pursue your hunch." "Share your strategy." "Experiment." "Justify." "Defend your ideas." "Verify your results." "Listen to others."

In order to overcome student fears that their answers will be wrong or that other students will not listen respectfully, the teacher must work to build trust. In the following segment of whole class talk, the teacher reinforces a student's efforts to explain. The topic is prime numbers and the teacher has just asked a student to explain what a prime number is.

Brett: A number divisible by one and itself.
Teacher: Only evenly divisible by one and itself. And we had some questions. Some people doubt that two belongs on that list. How many people think it does and, if so, why? Karrie, why?
Karrie: Because you multiply it so by one, but, well, it's hard to explain, really.
Teacher: I think you've done a pretty good job.

The teacher then called on another student who had her hand up. That student and others expanded the explanation Karrie was having difficulty expressing.

The classroom environment must allow students to make false starts. A comment such as "We will help you" often helps a reluctant student to be willing to talk in front of the class. Teachers must model the behavior that is expected from the students such as attentively following a student's "trail of thinking" and respecting students' opinions (no put downs). Encourage risk taking, and help students recognize that there is more than one way to solve a problem, and the "best way" is the one that is most meaningful to the learner. Applaud perseverance when problem solving and applaud the students' efforts at critical thinking.

Critical thinking must be valued if students are going to participate in good discussions. Answers to problems usually require only a few words. On the other hand, how you arrived at the answer or why you think the answer is or is not correct re-

quire true communication. Try to convince students that critical thinking is as important as the correctness of the answer. The teacher can do this by praising the depth of a student's thinking and reasoning even if the answer turns out to be wrong. In the following segment of class talk, Steve has been explaining his theory about how to decide if a number is prime and has been unsuccessful in showing that it always works.

Teacher: Okay. So it looks like we're just going to have to keep dividing. Well, what can we do with Steve's theory? It doesn't work every time, unfortunately; but it was a great idea. Could we modify it in some way? Could we put some limitations on it so it would work? Could we make it work a certain percentage of the time, so at least it would help us decide if a number is prime or composite? What can we do? Terry?

Terry: Well, I think it's true if the number on the right hand side, like if the number on the right is greater than the number on the left. Because there's sort of a pattern going and if the number on the right is greater then it seems like it's...

Teacher: Okay, come show us. If Steve could just step aside for just a moment. Come show us what you mean.

Sometimes discussion of an incorrect idea leads the class in a new direction. As the teacher works at building a classroom environment in which students are willing to risk being wrong, students begin to realize that their ideas are valued, that there is more than one correct way to solve a math problem, and that their feelings will be respected by the teacher and other students.

The students need frequent opportunities to explain their mathematical thinking and justify their solutions. Teachers bring this about by asking questions such as, "Why do you think so?" "Does everyone agree with your answer? Why or why not?" The teacher must listen patiently to a student's ideas and expect the other students to do likewise. One way to encourage students to listen is to have them put into their own words what someone else has said. Restating someone else's idea also begins the process of taking possession of the idea for themselves. It pushes students to consider: What is the idea? Do I believe it?

The teacher must help students develop interpersonal skills by setting class norms that include no "put downs," how to disagree with another student in a polite way, and how to listen. The following excerpt illustrates how students learn to disagree. Eric helps other students understand why a procedure is not correct and illustrates the role of critical thinking. The class is discussing this puzzle problem: Each of my daughters has as many daughters as sisters and the combined number of daughters and granddaughters is my age. I am between 50 and 70. How old am I?

Nadine has just explained that you add 50 and 70 and then divide by 2. This procedure has been identified as taking the average.

Teacher: Are we looking for the average of the two ages the grandmother can be between? Interesting question. Eric?

Eric: I'd like to challenge her on that.

Teacher: Why don't you go up there to the front. (Eric goes to the front of the room.)

Eric: My age is between 1 and 1000. If you add it up, 1001, and split it in half, you get 500.5. That's not how old I am.

Teacher: Does that make anybody who averaged the two ages change his or her mind? (Students hands go up.) Maybe the average isn't what you're looking for.

Eric: My age is between the ages of 1 and 70.

Teacher: You'd be 35. And he's not 35 either; but he is between 1 and 70. Wouldn't you agree? All right. Good point. I like that, Eric. I like your reasoning.

As students listen to other students' presentations, the listeners also have the responsibility to ask for clarification, to relate the presenter's strategy to their own, and, in general, to make sense of the other students' explanations. Students also need guidance in learning how to work in front of the class. These skills need to be introduced in the fall and used throughout the year. Creating posters of guidelines for working in front of the class, listening, and working in small groups are ways to remind students of their responsibilities. Although getting started may be difficult, after students gain experience talking in small groups and in whole-class discussions, talking about mathematics becomes a comfortable and seemingly natural activity for middle school students.

The Role of the Teacher

As suggested above, the teacher has an important role to play in setting up the classroom environment. Getting students to talk is related to the types of questions that the teacher asks. Questions need to be open ended, they need to require more than just a single word "correct" response. Some questions that encourage discussions are the following:

- Why do you think that?
- Tell the class what you were thinking when you solved the problem.
- Can you explain what (student's name) said in different words?
- How do you know this is right?
- What are some of the questions we might ask about this problem?
- Why does your answer sound reasonable?

The shift to increased student talk about mathematics may require the teacher to acquire a new perspective on teaching. The teacher must focus more on students' construction of meaning than on delivering facts to be remembered by the students. Student solutions and explanations must be valued, requiring class time to be allotted to discussions of how students arrived at a particular answer. Valuing student ideas helps the teacher develop the patience to listen to several solutions to a single problem. The teacher must be flexible in designing lessons because students' discussions may lead the class in a different direction from the original plan. Developing classroom procedures that allow for this flexibility is often the hardest part for the teacher.

The following excerpt from a discussion about factors illustrates some of the subtle ways in which a teacher can build trust, accept divergent answers, and help students develop the language and concepts of mathematics in whole-class discussions. The discussion begins with the teacher asking students to use their own words to describe a factor. Her words and her wait time emphasize that she expects students to think.

Teacher: Who knows what a factor is? Who can tell me what a factor is in your own words? Think about it. (pause) Maury, are you thinking? (pause) Okay, let's hear Linden's definition of a factor.

Linden: The answer, um, that you get from a subtraction or mult—er, no it's not. It's a, a – it's a, a division problem? I forget. I need to think.

Linden is clearly not sure about his response. The teacher, however, ignores his insecurity and, below, validates his efforts. Linden then responds by providing additional information. Linden's comment is again accepted without criticism as the teacher includes Terry in the discussion.

Teacher: So, it has something to do with one of the operations.

Linden: You know like common factor or something like that.

Teacher: Uh huh. Okay, let's hear Terry's definition and maybe it will come back to you. You're in the neighborhood.

Terry interprets the teacher's response to Linden as an evaluation of its correctness and shows surprise. Ignoring Terry's surprise, the teacher repeats Terry's words in a questioning tone, providing sufficient encouragement for Terry to expand his explanation.

Terry: He is? That's different than mine. I think that factors are a whole bunch of numbers.

Teacher: A whole bunch of numbers?

Terry: Well, they're like different numbers for the factors.

Teacher: Okay, that's a good beginning. Take it from there, Brian.

In the final comment above, the teacher's words and the tone of her voice suggested that the activity of describing a factor was the responsibility of the whole class. In the discussion that followed, the teacher returned to students who had responded after other students had given explanations and asked students if they wanted to change their definitions or how they would change their definitions, providing students an opportunity to practice restructuring their explanations and again emphasizing that the whole class was responsible for the definition. (For a discussion of how this excerpt relates to types of classroom discourse see Adams, 1994, pp. 117-118.)

In an interview with one author, the teacher described the importance of such discussions in this way:

> Leading good discussions is a hard job! It often leads to a very lively classroom. Encouraging math talk, however, has shown me the intricate beauty of a child's reasoning and the confidence that comes

from sharing that reasoning with others. Knowing that math talk leads to a clearer understanding of mathematics makes it worth the extra time and effort.

Small Group Discussions

When small-group discussions are effective, all students participate in the discussion and there is a focus on "thinking" rather than just "getting an answer." Many different factors influence the interactions in small groups (see, for example, Cohen, 1986). The teacher needs to be alert to those factors and make adjustments to the groups when needed. The suggestions here provide a way to get started.

For best results, do not leave the make up of the small groups to accident. Do not put all of the weak students or all of the strong students in one group, even though students might want to work that way. The purpose of spreading high ability students and weak students throughout the groups is to increase the level of performance for all groups. The strategy, however, cannot work in isolation. It also is important to identify and to stress the ways that students are to contribute to the group process.

The first time that students work in small groups they need to be provided guidelines on how to function in small groups. Different behaviors are appropriate for different activities in the classroom, and how to act needs to be made explicit. When the class is working in small groups, for example, the individual student needs to be contributing to the solution, but when listening to someone's solution in whole-class discussion, the listener must focus on understanding that solution. The guidelines should be posted in the classroom and reviewed frequently. The following list is one possible set of guidelines for group work:

1. Work together on each problem, make sure that everyone participates and that you share the leadership of the group
2. Proceed at a pace that is comfortable for your own group
3. Listen carefully to each other; whenever possible, build on each other's ideas
4. Achieve a group solution for each problem
5. Make sure that everyone in the group can explain and justify the solution

Talk is also encouraged by the types of problems that students work. The "grandmother" problem above, produced considerable talk in small groups and whole class discussions. Look for problems that require more than one step to solve, can be solved in more than one way, or have more than one solution. Think about modifying problems in the textbook to increase their problem-solving value or have students write their own problems.

A strategy for helping students feel comfortable presenting their solutions to the whole class is to have each group prepare a transparency of the solutions to the problems that they work. As students put problem solutions on a transparency for later presentation to the whole class, the responsibility for writing on the transparency is passed from one student to the next student in the group when they start a new problem. Any student in the group might be asked to explain the problem, even though he or she did not prepare the transparency for that problem. Thus, everyone needs to understand the problem and its solution. This requirement makes it necessary for students to talk to each other. Make it clear that you expect students to be able to explain their thinking when they solve a problem, to justify their answers, and to tell why an answer is reasonable. If students have to defend their solution to others in small groups before they get in front of the class, they will develop a better understanding of the mathematics and more confidence in their own ability to solve difficult problems.

In order to provide guidance, the teacher needs to note how well the groups work together as well as the kind of products they produce. Rewards for working well together reinforce the importance of cooperation. Students can be asked to evaluate how they are contributing to the successful operation of the group. Ask students specific questions: Did you share leadership in your group? Did everyone have a chance to contribute ideas? Did you ask questions when you didn't understand? Is your group working well? Why or why not?

Whole Class Discussions and Student Presentations

After small group work, discussing solutions with the whole class provides an opportunity to develop a habit of "looking back." Looking back is an important stage in problem solving (Polya, 1945) that

students generally do not do on their own. Presenting solutions to problems worked in small groups provides an opportunity to reflect on the problems. That reflection provides an opportunity to increase the learning through discussions of multiple ways to solve the problem and ways to relate concepts used in the problem.

The teacher can help reflection by broadening the content and purpose for doing a problem. Think about variations on the problem and for different interpretations of the problem. The teacher, for example, might ask questions such as "What if we changed...?" "What does it mean to say that...?" "How could you change the problem so that...?"

Explaining how a problem is worked is often harder than working it. Special attention to the language of mathematics is needed in order to help students carry on a good discussion. Emphasizing math vocabulary in discussions and posting on the wall such words as "analyze," "justify," "defend," and "reason" help students focus on and develop vocabulary.

When students are asked to present the small group solution to the whole class, the presenter sometimes feels more comfortable if everyone in the group comes to the front of the class. Assurances that they are not the only ones responsible for the correctness of their presentation, that it is all right to make mistakes, and that the class will help them out also enables students to relax and gain confidence in their own abilities. It is important that the presentation be more like "leading the discussion" than making a "formal presentation." Once students realize that the environment supports them, they become more and more comfortable with getting in front of the whole class; some even become eager to talk to the class.

Conclusion

Math talk takes time, is open ended, and often leads to other things. The teacher must be willing to adapt instruction to the student ideas presented. For students to understand mathematics conceptually, they need to interact with each other and with the teacher in discussions about their own ideas about mathematics. In addition to increasing their poise and communication skills, asking students to justify, verify, and share their strategies empowers them mathematically by recognizing their thinking as something worthwhile. When students do not agree, students must learn how to justify their solutions. Part of the skill that students are developing is their ability to convince another student that their ideas are valid.

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Literature Circles in the Middle School Classrom: Developing Reading, Responding, and Responsibility

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In my continuing quest for ways of extending and strengthening the literacy of my seventh grade students, I have discovered the power of literature circles. These small-group discussions have become an integral and essential part of my language arts program. I use them to link our reading, writing, and classroom talk in an authentic manner and to create a community of learners who help each other learn and grow.

Literature circles are groups of three to eight students who have read the same story or novel and have gathered to discuss their reading. Usually the students have self-selected their books, and the literature circle members change as books are completed and new ones chosen. These discussions are teacher supported, but student led, and combine the educational ideas of collaborative learning and independent reading (Daniels, in press). Literature circles meet on a regular basis, and students agree on how much to read independently by the next circle meeting. Students learn various ways to respond to the literature and to prepare for a literature circle discussion. Literature circles are a "hands-on approach" that promote leading as an expressive process (Kitagawa, 1994) and have as their goal to ensure students are conversing with each other rather than talking only to the teacher (Garan, 1994).

Benefits of literature circles

Research is beginning to show us the many benefits of literature circles. First, literature circles help our students converse about literature. Sowder (1993) tells us that too many voices in our classrooms go unheard. One way to remedy this situation is to incorporate literature circles in the curriculum. Knoeller (1994) completed her dissertation on the topic of student-led discussions and found that 90% or more of students spoke during a student-led format.

Second, sharing personal response to literature is essential to understanding it. A student named Luke (Kauffman & Yoder, 1990) said it well, "The meaning of the book isn't complete until it is shared" (p. 153). Literature circles encourage students to share with each other and ask questions of one another in a way that just isn't possible in a whole class discussion that is focused on the teacher. Asher (1992), an author of books for young adults, tells us, "I have always maintained that my books are only half finished when written, that the other half is in the reading, what each reader brings to the story out of his or her own experience" (p. 15). It is so important to set up a classroom where personal response is fostered and celebrated.

Third, literature circles use the social nature of middle school students to invite reading, extend thinking, and prolong involvement with text. "The acquisition of knowledge is not only found in the personal construction of meaning from a text but also in the context of social interactions with peers" (Leal, 1993, p. 115). Peers are so important to middle school students – let them talk argue, debate, agree, and disagree over books!

Fourth, there is no ability grouping involved in literature circles, they instead promote an acceptance of others' abilities, strengths, and responses. Porter (1990) describes literature circles as vehicles through which students can try out their ideas, seek answers to questions, and respond to the ideas and questions of others. Literature circles are a natural way to help build self-esteem and acceptance of others (Pierce, 1990).

Fifth, students can see their own growth as they learn to participate in literature circles. "The ability to engage in an extended exploration of literature is a tremendous intellectual achievement" (Hanssen, 1990, p. 204), and literature circles can help students realize this potential and recognize their growth.

Sixth, literature circles support the skills our students will need as they join the work force and become our community and national leaders. Calfee, Dunlap, and Wat (1994) state that our world of the future will call for citizens who are proficient in active inquiry, problem solving, and communication, and who are able to think reflectively and succeed

socially. As adults, whether they are discussing a book with friends or reporting on a text for a job, retelling and expressing understanding is important. We want to prepare students "to leave our classrooms and join new communities of readers" (Hanssen, 1990, p. 209).

Last, I'd like to add a benefit I have been pleased to notice in my own classroom. I was already convinced that literature circles helped develop reading strategies and that my students had become much more proficient in responding to text in different ways; but something I didn't expect was the responsibility instilled in my students through this approach to teaching literature. As I watched literature circles in action, I observed reading strategies exercised and strengthened, responding methods became more varied and creative, and active responsibility took root and flourished.

Classroom environment

The foundation of successful literature circles is an encouraging, sincere classroom atmosphere. If discussions about text are simply comprehension checks, students will read to remember information, but if discussions are conversations based on personal response, students will read to participate in literacy experiences and will construct their own personal meaning (Harste, Short, & Burke, 1988). These authors also recommend that to assure productive literature circles, the classroom must be a place where risk taking is applauded, varied constructions of meaning are expected, and collaborative learning takes place throughout the curriculum.

Along with these characteristics, another important ingredient is ownership. The teacher must be willing to allow students to control their own literature circles, to transfer the responsibility from the teacher to the students. This is a slow process, but it begins with the desire to help students explore their own ideas, accept others' interpretations, and reach new understandings (Harste, Short, & Burke, 1988).

As literature circles become an accepted form of response in the classroom, the teacher can observe and choose the best ways to develop reading and responding strategies and decide how to facilitate the ongoing transference of responsibility from teacher to student. Following are some ideas based on my experiences working with a class of seventh grade students who are learning to appreciate and comprehend literature through literature circles.

Developing reading

The most important thing I can say about using literature circles to assist my students' develop reading strategies is that they are reading more, much more. I began my quest to improve my language arts program by implementing a reading workshop format-based on Atwell's (1987) model. My students enjoyed choosing their own independent reading material and writing responses in literature journals. I saw great growth, but still something was missing. I decided what was missing was the opportunity to talk. My students loved to talk, and I wanted some of that talk to be about books.

I was introduced to literature circles at a National Council of Teachers of English (NCTE) conference featuring Harvey Daniels, and I knew this was the balancing element for my program. As my class and I experimented with literature circles, I noted all the benefits listed earlier and determined to make literature circles a permanent part of my curriculum. I now offer reading cycles to my students. We will spend three to four weeks in a reading workshop format and three to four weeks in literature circles. I find that these two reading methods balance and complement each other and ensure that my students are reading more text than ever before.

With the addition of literature circles, my students also began reading a better variety of books. When we are beginning a new cycle of literature circles, I give book talks on five or six different books from which they may choose. They still have a choice of what to read, but I can control the genres and titles available. Students have told me they appreciate this because they will read a book they might not have chosen independently, and they may find a new author or genre they really enjoy. I can offer literature circles for historical fiction, nonfiction, science fiction fantasy, a particular theme, or an author study among other possibilities. My reading program can address what the students need to experience.

Developing responding

Gee (1990) explains the difference between acquisition and learning, and I use this information to guide my reading program. Acquisition is the pro-

cess of acquiring something naturally, through exposure modeling, and practice. Learning is the process of obtaining metaknowledge through direct instruction (not necessarily the teacher) and conscious reflection. Acquisition of reading strategies is accomplished by the independent reading my students do, but learning has to include talk and reflection. Literature circles are designed to facilitate learning. Thus, responding is a very significant part of our curriculum. Students need to be able to respond independently in writing to prepare for literature circles and then be able to take those responses and share them effectively.

I take students through several stages of responding. The first is based on role sheets designed by Daniels (in press). Students are given a role sheet to fill out as they are reading the group-determined assigned pages to prepare for the next literature circle There are eight roles students can use. The can be rotated so students get a turn with each role as they move through a book. If there are literature circles with less than eight students, the roles most befitting the story would be used. The roles Daniels suggests are

Discussion Director – Questions about the text are designed and discussed

Passage Master – Important passages are noted and shared

Connector – Connections are made between the book and real life

Illustrator – An important part of the story is illustrated and shared

Scene Setter – The settings in the story are tracked and described

Character Captain _ Responses are made about the actions of the characters

Word Wizard – Interesting or confusing words are defined and discussed

Summarizer – A brief summary of the key points is given

These roles are used to teach students to build on each others' comments, make connections, reflect, and evaluate the story instead of simply reporting on the book. The physical aspect of having a role sheet to fill out seems to help students prepare for and carry out a literature circle.

As students become comfortable and efficient with the role sheets, I change the sheets to allow for more freedom in responses. I put all eight roles on one sheet and encourage the students to fill out any parts that apply to the text they are reading. They need not write something for all eight. They determine what is most important to discuss in their literature circle for the section of the text that was read.

Now my students are ready to give up the role sheets entirely. My goal is to teach them to discuss literature intelligently and creatively without any artificial prompts. For their next literature circle cycle I hand out small self-stick notes. I remind them to always have the eight roles in their mind to help them, but they may make any comment about the text they think is necessary for their literature circle discussions. I encourage them to aim for at least two notes per chapter, but in reality there may be one note in some chapters and many more in others. The advantage to this technique is that the students can put the note at the exact point of the story that caught their attention. When they are in their literature circles they can flip through the book and find the points they want to bring up for discussion. They are always looking at the text while they are discussing.

Another way to help students respond to what they are reading is to model the process during read alouds (Smith, 1990). I read aloud three to five books to my classes in a year and I have used the opportunity to have them respond aloud to the story as I would encourage them to respond in their literature circles. I focus on using Daniels' eight roles instead of a question-answer format

For the last literature circle of the school year I give my students a choice. They may again use the self-stick notes or they may simply respond in their literature journal and bring their journals to the circle meeting to use for discussion. Either method would be acceptable with adults meeting to discuss a book, so I feel my students are being prepared for reading communities outside the school.

There are many other techniques that students can use to respond to literature and prepare for a discussion. Some examples are listed below.

"Seed" Question – To assist students trying to develop their own discussion, the teacher can provide a reflective question to get them started (Villaume, Worden, Williams, Hopkins, & Rosenblatt, 1994).

Index Cards – Students can come to their literature circle with an index card that has three issues (and page numbers to back them up) that can be raised (Kitagawa, 1994).

Webbing – The members of the literature circle can create an ongoing character or story web that can be added to each time the circle meets (Kauffman & Yoder, 1990).

Mini-Lessons – Mini-lessons can be taught that discuss characteristics of a good listener, how to identify an effective discussion topic, how to be responsible for developing a topic, or others that meet students' needs (Villaume, Worden, Williams, Hopkins, & Rosenblatt, 1994).

Publishing – In order to tie writing and reading more closely together, literature circle groups can be used to share writing, especially if the writing is related to the book they are reading. They can help each other revise, edit, and publish their writing (Porter, 1990).

Presentation – Creating a presentation for the rest of the class after completing a book enables students to take a stance on the book, pull together their scattered thoughts, and experience new media (Kauffman & Yoder, 1990). They can present a readers' theater piece, a skit, a collection of illustrations, or a poster advertising the book. From listening to the presentations, other students may decide to read that book.

Journal Entry – After completing a literature circle cycle, students can write an extensive journal entry reflecting on the book they read and evaluating their literature circle experience.

Developing responsibility

As my seventh-grade students have prepared for and participated in literature circles, they have taken on more and more responsibility for themselves and their group members. And because I have allowed and encouraged them to take on these responsibilities, I have had the opportunity to observe and acknowledge their accomplishments and steer them in directions to enhance their understanding and enjoyment of the literature they are reading. During my observations, I have noticed three ingredients in developing responsibility through literature circles: choice, ownership, and empowerment. Choice comes first. Students choose the books they read, the responses they write down, and the topics they discuss. Of course, along with choices go the consequences. Teachers and students both will have to deal with silence in literature circles and occasional off-task behavior. But as students cope with these problems, with teacher support, they will learn how to handle them and will develop responsibility. The students certainly can't learn responsibility if they are never given any. As the teacher lets go, the students use their own choices more and more successfully and make the literature circles their own.

This leads into ownership, the second ingredient. A person cares more for something he/she owns. I know students have taken ownership of their literature circles when I overhear them discussing their book in the hallway, or they extend their reading assignment because the book is so good they can't stop. When students bring in books to class that are of the same genre or by the same author as their literature circle book and want to share it, I know they think of the literature circle as theirs and not mine, and I work even harder not to break their fragile acquisition of responsibility.

As ownership is achieved and responsibility is exercised, the students become empowered. They have gained control of a part of their learning. This is when I feel most confident that what they have learned through literature circles will help them in other curricular areas and as adult readers. Perhaps what we want students to gain most from literature circles is the ability to take responsibility for their own learning and the empowerment to seek knowledge for themselves (Fried, 1993).

The teacher's role

The teacher's role in literature circles is crucial. The move to literature circles requires a teacher willing to take a responsive role rather than a directive one. The teacher needs to take risks in allowing students the time to talk, the freedom to have silences, and the possibility of getting side tracked. We need to truly believe that students will talk about what is important to them and will relate the literature to their own lives. McMahon (1994) reminds us that sometimes we may feel the need to direct our students' discussions, but once we overcome this tendency, we will be amazed with their interpretations and insights.

When my students begin their literature circles on a particular day, I usually circulate around the room to make sure everyone gets started, and then I choose a circle to join. Our literature circles last from 15 to 40 minutes, depending on the book and topics being discussed, and I may circulate again as some circles finish and disband to continue independent reading.

My objective in joining a circle is not to direct it, but to be a participant. I keep my comments closely related to the topics broached by my students, (McCutchen, Laird, & Graves, 1993) and I don't fill silences. I let my students take the responsibility. I am just there to support the enjoy their accomplishments. If a group is truly "stuck," I may use a very open-ended question or a comment of my own about the book. If talk breaks down often, it may be worthwhile to stop the circle and ask students to write down why they feel the discussion is not working (Gilles, 1990). What is the problem? What can you do to help? The lists of suggestions can be shared.

I have discovered there are many more benefits to having literature circles in the classroom than there are problems. Leal (1993) spoke of the window that is opened for teachers with the use of literature circles. Through it we can see students' strengths and weaknesses, how their prior knowledge influences their responses to literature, and what direction our future instruction should take. Literature circles give the teacher a unique opportunity to get to know students better and to watch clearly as they learn to read, respond to literature, and accept responsibility for their learning.

Evaluation

Evaluation is a necessary part of every reading program; however, I continue to strive to make evaluation a meaningful learning experience for my students. Pierce (1990) stresses that in order to obtain a meaningful evaluation of literature circles, teachers need to listen to various circles and decide what characteristics are valuable. What is valued is what should be assessed. Perhaps we can include our students in this assessment as well. What do they value in literature circles? What do they think constitutes a successful circle? What is important to them?

Observation is a critical method assessment for literature circles. Through participation in literature circles, teachers can look for the knowledge possessed by the students, the skills they are using, new understandings and connections being made, the effort they are putting in to make the circles successful, and any other features deemed valuable by the teacher and the students. The grades I give my students during my observations are based on their effort and improvement I see over the school year. These grades are very subjective. I also feel I need other methods of evaluation that are more concrete and objective. These might include their written journal entries about the book they are reading or how their literature circles are succeeding. I also collect the role sheets they fill out to prepare for their circle discussion, and I read and evaluate the comments and questions they write on the self-stick notes and put in their books. Another interesting idea is to audiotape or videotape the literature circles both for teacher evaluation and student self-evaluation (Fried, 1993). This would help students gain some metaknowledge about the discussion process and some ideas on how their particular group could improve.

As I evaluate I always try to keep in mind my overriding goals. I want my students to be successful readers who can respond to a piece of literature and share their insights with others, and I want them to use the opportunity afforded them in literature circles to develop responsibility for their behavior and their learning.

Conclusion

There are times when I am facilitating literature circles in my classroom and things are simply not working well. Gilles (1990) relates such a time when the students were acting silly, the teacher was tired, and the books were just not interesting enough. This happens in every classroom, in every subject area, and we must not be tempted to look only at a certain day's product and take the responsibility back from the students. After seeing the power of literature circles in my classroom and doing research to assure myself that my feelings about this activity have a strong, educationally sound base, I am confident the process of small group discussion is extremely valuable.

There are several things teachers undertaking literature circles in their classrooms can remember to help keep their sanity. First, integrating literature circles into the curriculum takes time. Students who are used to a basal approach to reading, or have only participated in whole class discussions, will need time to learn to venture into literature circles and enjoy them. Second, teachers using literature circles need to be bold and take risks. If a literature circle doesn't work out, the students have still learned to take a risk and how to try again to make it work. Third, remember that students learn from a teacher

who is learning. Share with your students how you are learning about literature circles, and they will learn right along with you. Last, there is no "right" way to do literature circles. Look to your own teaching style and your students' strengths and needs, share responsibility with them, and develop your own!

Perhaps the most significant advantage I have found to using literature circles in the classroom is their personal approach. Watson (1990) mentions how students involved in literature circles "live" with their books and characters. I wish that for my students as well. I hope they learn that literature is not just text on a page, but a wonderfully "alive" story just waiting for their involvement and response.

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Critical Dialogue: The Road to Literacy for Students at Risk in Middle Schools

Lance M. Gentile & Merna M. McMillan

Other social agencies have identified specific roles for professionals working with students deemed at risk of dropping out of school in the middle grades, but education has yet to define a clear role for classroom teachers in developing the literacy of at-risk youngsters. Critical Dialogue, an instructional approach based on these students' background knowledge and experiences, is offered as a possible solution to this problem.

Although the approach can be used with all students in middle schools, it is especially useful as an alternative for those who fail to succeed in traditional learning environments. This approach varies the setting for learning to read and write, emphasizes responsive instructional "conversations," promotes cooperative learning activities, respects and integrates these students' background knowledge and experiences, and stresses the development of the linguistic and higher order thinking skills they need to succeed with content area assignments.

The development of literacy in middle school requires students to interact with text, the teacher, and one another to express or clarify ideas and feelings. Students must apply a wide range of background knowledge to respond successfully to their reading and writing assignments (Gentile & McMillan, 1991).

Middle school teachers share great concern over many of their students' poorly developed communication skills. At this level, a host of problems in students' higher order thinking, planning and organization, self-regulation, and decision making are more evident than they were a generation ago. The ability to understand language and use language to learn and demonstrate learning are survival tools for these students, the tickets for them to any successful higher educational experiences or job entry. When they cannot use language for these purposes they are at risk of dropping out of school (Ralph 1988).

Students at risk of dropping out

Potential dropouts in the middle school come from every level of society, but the majority live in poverty and are members of ethnic and racial minority groups. Many are the products of broken homes or dysfunctional families. Whether or not they speak English, their language is often incompatible with the language of the school. They feel alienated from a system that appears inflexible, hostile, and unresponsive to their needs. They have vastly different backgrounds but many have one characteristic in common, they find no meaning in their lives for literacy. They have given up hope of making a living or having a life based on the value of education.

Who these students are, what they know and what they have experienced is often seen as having no merit. Many educators view them, almost exclusively, in relationship to their deficits. They teach to their limitations, expect them to do poorly, to fail, and drop out; and they do. By the time these students reach their teens they are stymied. Their attitudes toward school harden, born of a perception of themselves as non-readers and non-writers.

Many of these middle school students have had prior relationships with teachers and learning that are unproductive or counterproductive. They have few role models for literacy and fewer, if any, goals or incentives to achieve. No single approach to teaching reading and writing will meet all their learning needs. But by identifying their strengths and valuing and tying their firsthand experiences and background knowledge to literacy instruction, teachers can provide an academic setting in which these students can be successful and one in which mutual understanding, respect, and trust can flourish. This strengthens the teacher/ student relationship and creates congruence between the home culture and the culture of the school (Brophy, 1990).

Often, the assets these students bring to the middle grades are unnoticed and unprized by schools and classroom teachers (Moll, 1990). These students at risk have a vast store of intrapersonal knowledge and experiences with life's polarized themes: good and evil, life and death, love and indifference, kindness and malevolence, joy and sorrow, perseverance

and surrender, giving and receiving, confrontation and compromise, purpose and aimlessness, belonging and alienation, honor and dishonor, hope and despair, vitality and lethargy, loyalty and treachery, courage and cowardice, generosity and greed, forthrightness and dishonesty, loss and gain, proper ambition and exploitation, and acceptance and change. The life experiences they have in this arena provide a fertile barrel of background knowledge teachers can tap to help these students develop "cognitive commerce" with text.

Developing Critical Dialogues:
A triangular curriculum

Students at risk in the middle grades can read and write to learn, not by means of isolated drills and exercises, but by means of a wide body of literature, exposition, and multimedia that is significant to them. Teachers can demonstrate that literacy is a powerful tool to help them relate better to themselves, others, and the world outside the classroom through the use of critical dialogues focused on excerpts from quality literature, exposition, and audio/video cassettes. These dialogues are structured conversations that require students to listen, speak, read, and write for meaningful purposes. They are designed to minimize teacher talk, which typically dominates classroom instruction in the middle grades (Goodlad, 1984). Instead they are fashioned to get students at risk talking and listening to one another and thinking through, evaluating, and expressing ideas. During these dialogues students must identify the facts of a particular selection, state what they were thinking and feeling while reading the selection, cite the most important thing learned and the most significant question raised by the author, and apply the information in a writing activity. The instructional "conversation" is focused on textual and multimedia material with direct application to the problems and ethical dilemmas students at risk have encountered on the streets and in their homes.

Freire (1985) employed Critical Dialogues to develop Brazilian peasants' literacy using their personal experiences to help them connect language, thought, and reality. The approach can help teachers connect reading and writing to at risk students' home culture, background knowledge, intrapersonal worlds and internally motivated interests.

Critical Dialogues, used internationally to alleviate the effects of stress on persons considered to be at risk after exposure to disaster or trauma, have been adapted for classroom use. Teachers can conduct dialogues that build a bridge between these students' background experiences and the school's curriculum, in the process developing positive attitudes, self-esteem, and self-regulatory skills. Using Critical Dialogues, teachers become better listeners and help students anafyze text structure, pose questions, construct meaning, interpret ideas, and communicate more effectively. Talking is not necessarily teaching, but for students at risk, many of whom merely occupy classroom seats until they drop out of school, talking and listening to one another means learning. Talking about text and writing from experience are major precursors to developing literacy because these operations help mediate personal thought and problem solving and organize mental processes (Vygotsky, 1986).

Using Critical Dialogues teachers lead students in discussions of literary material focused on multicultural issues and problems of the human condition. Teachers serve as facilitators and anchors for learning. They model higher order thinking and help students explore and discuss alternative ways of coping with the turbulence and chaos of their lives in and out of school.

Using Critical Dialogues embeds learning in these students' assets, the conditions that characterize their communities, and that they have personally experienced. Critical Dialogues are designed to educate and entertain, stimulate higher order thinking, and provide a lens through which teachers may see and value their students' differences.

Changing learning conditions in classrooms

Literature asks questions of vital importance to at-risk students' learning and understanding: Who are we? Where do we come from? Where are we going? Who is going with us? What are we like? Why are we like that? What do we need ? What should we settle for? Why do we do what we do? What responsibility do we have to ourselves? What responsibility do we have to society? It is rich with stories worth telling, places worth dreaming of, ideas worth thinking about, and lives worth caring for (Gentile & McMillan, 1991).

But many at-risk students have not acquired a cultural sense of what understanding is. This may be because parents and teachers seldom engage them

in what Pogrow (1988) has labeled "understanding" conversations. He said:

> Most at risk students do not seem to know how to use ideas in school to develop understanding, to generalize, or even how to have conversations about issues other than turfdom. It is not that they do not have the ability; it is probably that understanding conversations have never been consistently modeled for them by adults, either at home or in school. (p. 80)

Pogrow's approach using interactive computer models for directing "understanding" conversations has produced impressive results (Pogrow, 1988;1990). However, by developing Critical Dialogues between themselves and their students, teachers in the middle schools create a vehicle for forging healthy relationships, altering the conditions for learning in the classroom, and modeling higher order thinking processes. Critical Dialogues are conducted with at-risk students using selected literary excerpts. Many teachers are misguided in their insistence that these students must read the "whole book," recite answers to abundant questions, complete written reports or assignments, and take tests to gain anything of value from literary experience. A great deal of teaching and learning can occur using Critical Dialogues focused on shorter amounts of text. Teachers develop classroom libraries of the literature and texts from which the excerpts are taken, and students are encouraged to peruse the works in their entirety during periods of Sustained Silent Reading. Using excerpts is important in the middle grades with students at risk of dropping out of school because the teacher can build motivation by supplementing or changing the material and activities almost daily.

Teachers can be trained to create an atmosphere in the classroom geared to inquiry and discovery. To be effective, teachers must do the following:

1. Get at-risk students to think about and begin questioning what they read
2. Gain and hold at-risk students' attention
3. Honor their responses and judgments
4. Get them to listen to one another as well as the teacher
5. Move to higher levels of thinking and encourage at-risk students to make more thoughtful connections to the work, and
6. Reduce at risk students' stress or anxiety toward literacy learning in the classroom (Gentile & McMillan, 1987)

The Instructional Model

The following excerpt, taken from La Farge's *Laughing Boy* (1929) serves as a model for instruction. This approach blends literary and expository text and multimedia. However, the examples are illustrative rather than exhaustive; descriptive not prescriptive. They guide and suggest rather than dictate content for a critical dialogue.

In this excerpt, Laughing Boy is affronted by Red Man. He confronts him to redress his grievance. The themes among others, are confrontation and compromise and loyalty and treachery.

> The next time they met, Laughing Boy contemplated the man, and guessed at the dimensions of his soul. Red Man greeted him noncommittally. "Grandfather, let us not run around things, let us not pretend," Laughing Boy said. "You have not said anything, but you have said too much. Do not pretend not to know what I mean. If you like what you are doing so much that you are willing to fight about it go on. If not stop it. I say, not just do less of it, or do it differently, but stop it entirely. That is what I mean. I have spoken." Among Navajos, the reasonable and acceptable way to have done, had he acted, would have been from ambush. Red Man felt he had had a narrow escape. He emphatically did not like what he was doing that much. Time would inevitably bring sorrow to the fellow. "I hear you, Grandfather." (p. 202-203)

Framing the dialogue: The orientation phase

The first task for the teacher is to introduce the activity and work with students to identify ground rules for conducting a Critical Dialogue. Many at-risk students do not understand the function of seminar or small group instruction and may see these more open learning experiences as opportunities to act out. Teachers and students should agree on the appropriate rules for conducting a Critical Dialogue. Initially, the teacher works with the entire class but gradually, over two or three months,

relinquishes some control of the process to the students themselves. As students are acclimated to the process and learn the structure of the critical dialogue, their role, and the role of the teacher, they may be divided into small groups of three or four (Johnson & Johnson, 1975; Slavin, 1985). In this situation, one group member assumes the role of the teacher and directs the dialogue. One serves as the recorder and keeps notes of the group's responses. One serves as a time keeper and keeps the group on task. If there are four students in the group, one may also serve as the presenter. This student shares the thinking and feelings of the group with the whole class when the teacher reassembles them for the wrap-up phase of instruction.

After laying the ground rules, the teacher introduces the selected excerpt and works to assess, access, and develop at-risk students' background knowledge and to identify key vocabulary and phrases. For example, the teacher might pose these questions: "This passage is taken from the book *Laughing Boy* by Oliver La Farge. What do you know about the Navajo Indians? What more would you like to know about these people? Sometimes we address one another respectfully using such terms as, *Sir, Doctor, Mrs.*, or *Ms.* In other circumstances we use these or other terms for different reasons. Can you think of different ways we address one another when we may have a veiled or hidden purpose. What purpose(s) does this serve? At times, Navajo males address one another using the term, *Grandfather* to indicate respect but this address may have other meanings as well." The teacher asks students to explain what is meant when someone says, *He contemplated the man, and guessed at the dimensions of his soul.*

Guiding the dialogue: The structural phase

In the next step the teacher introduces the material and works with the students to identify a meaningful purpose for reading it. "Read the title and first sentence of this passage. What purpose can you think of to continue reading this material?" The teacher surveys students' responses and writes one of their proposals on the chalkboard. Afterwards, the teacher suggests a possibility as well. "As I read this first sentence I'm thinking Laughing Boy is sizing this fellow up and I wonder why. I'd like us to read this passage to see if we can answer this question as well as the one I have written on the board."

Next, the teacher asks students to briefly state the facts presented in the selection and also helps them identify and state their reactions to what they read. A teacher would use the following questions to accomplish this purpose:

1. What are the facts in this passage?
2. When you were reading this, what were you thinking?
3. When you were reading this, what were you feeling?
4. What is the most important thing you learned from reading this passage?
5. What is the most important question you have at this point in our discussion?

Developing and expanding the dialogue: Instructional and modeling phase

The teacher summarizes, clarifies, expands, or adds to the dimensions of students' thinking or feelings. The teacher poses higher order questions, engages students in critical thinking, and models the mental processes for making comparisons, inferences, generalizations, assumptions, hypotheses, or conclusions. "It is interesting to hear some of your thoughts and feelings about this passage. You think Laughing Boy is angry with Red Man and he challenges him to stop whatever it is he has been doing or he will suffer serious consequences. You feel confused about what has taken place. As I read this material I have similar responses. I think Red Man has insulted Laughing Boy through some unspoken gesture. Notice, he says to Red Man, 'You have not said anything but you have already said too much.' Sometimes we say more with body language than with words. These messages can be more punishing than those that are spoken. Red Man knows he has been lucky and he says so. But, there is a suggestion (foreshadowing) that he is going to get even. Let's reread the second to last sentence. What do you think this means? Now, reread the passage silently and see if you can predict what might happen 'to bring sorrow to the fellow.'"

To further develop and expand the dialogue, the teacher can use multimedia and supplementary material or activities to link issues and problems to a broader range of experiences in order to help at-risk students make sense of the ideas in the text. For example, the 1990 National Geographic Society book, *World of the American Indian*, contains a section entitled "The Way of the Navajo." This pas-

sage provides students broader background knowledge of Navajo culture and stimulates further discussion. It requires them to read and interpret expository or textual information. The 1984 videocassette "Seasons of the Navajo" offers students a fascinating documentary of Navajo life. It emphasizes the people's interdependence and kinship with the earth, wind, and water. It highlights the Neboiya family and the importance they place on the healthy development of their children, livestock, corn, and the land. They are a holy people whose songs symbolize their relationship with the earth, trees, rivers, sky, and mountains. Frequently, the characters speak in their native tongue and the film contains numerous English captions which teachers will find useful for developing additional reading and writing activities.

Then the teacher may help students identify polarities in the selection that poses ethical dilemmas. The following question might be raised about the *Laughing Boy* passage: "I think it is interesting that Laughing Boy appears to hate Red Man but uses the polite, respectful address of, 'Grandfather.' Sometimes, when Navajos are deadly serious this approach demonstrates the importance of their meaning. It might be like when we say, 'Look here, Sir!' According to Navajo tradition Laughing Boy could have ambushed Red Man without being punished. I wonder why he didn't? What is your feeling about this?"

Closing the dialogue: Wrap-up phase

If students have been working in small groups the teacher reassembles them for whole class instruction. He or she elicits responses from students, either by continuing the dialogue or through a short writing activity that requires them to apply what they have learned in a writing activity for one of the following:

1. What difference can or do these ideas make in your life?
2. How can you apply what you have learned from this passage and discussion to other situations in your life?
3. What alternatives do you see for solving a problem in your own life that is like the one in this passage?

Teachers need to identify literary, expository, and multimedia material that is knowledge-based and furnishes at-risk students a broad range of subject area information. This multifaceted approach capitalizes on the way these students learn best in the postmodern era (Phillips, 1989). Moreover, when students learn to interact with literature in these ways and to take risks that foster deeper levels of comprehension and meaning they strengthen their ability to learn content (Pogrow, 1990).

Used properly, Critical Dialogues offer at-risk students opportunities to use what they know about their own culture to learn more about other cultures. They examine how ethics and values determine behavior. They discuss, write about, and question such things as the following:

1. If a character acted appropriately
2. If specific events or decisions led to the development of crises or appropriate solutions to crises
3. If a character challenged prevailing thinking, societal mores, or codes of conduct and why; and
4. If a character held conflicting values in these situations, who benefited from the decisions or events as they developed and why

Brown, Collins & Duguid (1989) concluded:

> By ignoring the situated nature of cognition, education defeats its own goal of providing useable robust knowledge. Approaches that embed learning in activity and make deliberate use of the social and physical context are more in line with the understanding of learning and cognition that is emerging from research. (p. 32)

Summary

An instructional approach using Critical Dialogues based on the background knowledge and experiences of students at risk of dropping out in the middle grades has been described. Critical Dialogues can be used to help teach students the following:

1. The interactive process between the reader, the text, other students, and the teacher that is vital to content learning
2. The importance of using their own knowledge to make interpretations and decisions and solve problems; and

3. To read and write for meaningful purposes, to expand their view of the world, to test their vision of reality, and to appreciate different points of view

This approach is effective because it presents reading and writing as interactive, constructive, strategic processes emphasizing not only background knowledge, but purpose setting, language development, direct teaching, cooperative learning, and self-regulation. The technique provides an innovative approach that helps define the specific role of the middle school teacher in developing at-risk students' literacy.

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II. Discussion

ACTIVITY 1: Improving Discussion

The paragraphs below will provide you with a good understanding of why classroom discussions are important and how they can best be conducted. After reviewing them, complete the several tasks in the section "Planning the Group Discussion."

Leading Effective Discussions

Classroom discussions are important in the middle level classroom for several reasons.

1. They provide the teacher with feedback about student learning
2. They lend themselves to higher order thinking skills
3. They help students develop interests and values as well as to change attitudes
4. They allow students to become more active participants in their learning
5. They enable students to hear and offer alternative points of view and to explore complex issues

On the other hand, there are some disadvantages to discussion sessions that include

1. Difficulty in getting student participation as this may be threatening to students because of peer pressure to excel
2. Time consuming to conduct
3. Not always well suited to covering significant amounts of content
4. Require more forethought and planning on the part of the teacher than lecture
5. Provide teacher with less control than other means of instruction. Students are more likely to participate successfully in discussions if the instructor
    - Carefully plans and prepares for discussion topics
    - Deals with experiences common to students
    - Encourages and recognizes students' contributions
    - Provides regular summaries and conclusions
    - Uses divergent questions
    - Challenges students without threatening them
    - Moves about the room rather than standing in one place
    - Provides students with short, informal, in-class writing activities that can be used productively to focus student attention and stimulate student thought initially on a discussion topic as well as brief, written summaries or reactions to the discussion's main points

According to Hyman*, there are five common types of discussions that can be used effectively in the middle level classroom:

1. Explaining discussions that analyze the causes, reasons, procedures, or methods of what has occurred
2. Problem-solving discussions that seek to address a conflict or problem facing the group or alarger community
3. Briefing discussions that reflect on the facts, meanings, and implications of a shared activity such as a field trip, videotape, or guest speaker
4. Predicting discussions that predict the probable consequences of a given situation, condition, or policy
5. Policy-deciding discussions that set policy on how the group should act or recommend policy for the larger community outside the classroom

* Source: Hyman, R. T. (1987). Discussion strategies and tactics. in W. Wilen (Ed.), *Questions, questioning techniques, and effective teaching*. Washington, DC: NEA

Planning the Group Discussion

1. Decide on a topic or theme.
2. Prepare a simple outline of major and minor points to cover during the discussion. This could include terms defined, concepts described, problems, points, or events/situations to be explained.
3. Next, write down a series of questions to be asked during the discussion. Code each as a lower order and closed question or a higher order and open-ended question. Balance between the two types.
4. Apply each of the following questioning strategies during the session to help facilitate the dialogue among and between participants.

   a. One strategy that encourages widespread participation during a discussion involves putting each student's name on a separate card. As a student volunteers or is called upon, his or her card is set aside until all have made a contribution.

   b. Another strategy is to post a list of discussion guidelines that students under your direction have developed Post these prominently so they can be observed during discussion dialogues. These guidelines might be put on a transparency or poster and reviewed in advance of every discussion. Guidelines include: (1) try to make at least one contribution to every discussion; (2) address remarks to any or all group members, not just the leader; (3) speak loudly and clearly so everyone can hear what you have to say; (4) get to the point and make your point; (5) stick to the discussion – don't introduce irrelevancies; (6) respect all opinions and contributions and disagree agreeably.

   c. Try designing a discussion guide immediately prior to the actual activity. This allows students to prepare their thoughts on the topic ahead of time. The guide might ask students to list definitions of key terms, record personal reactions to a concept, write down questions to be answered, or express important opinions. At the conclusion of the discussion have the student write a paragraph answering the following questions: (1) What have I learned from today's discussion? (2) What have I contributed to today's discussion?
   (The leader can collect answers to these questions as feedback or even as a basis for assessing the student's participation.)

   d. The human graph is another strategy to use effectively when initiating a classroom discussion. The leader prepares five different posters and places them around the room. *Strongly Agree, Agree, No Opinion, Strongly Disagree,* and *Disagree.* Next, the leader presents students with a series of controversial or challenging statements on a given topic. The students think about each statement carefully and on cue physically move to that part of the room with the sign that best describes how they feel about the statement. The leader then asks each group of students to explain its choice, primarily by a spokesperson. As the discussion progresses, students may move from one sign to another if the dialogue gives them new insights and they change their minds.

To secure feedback, complete these tasks and include the results in your portfolio.

1. Determine how each of the suggested discussion strategies worked for or against you as discussion leader. What would you do differently next time?
2. Prepare a rating scale for discussion participants to use in judging your effectiveness as a discussion leader and their effectiveness as a discussion member.

ACTIVITY 2: Dialogue Do's for Improving Discussions

Using a variety of techniques will improve both the dialogue and the interaction of students during large and small group discussion settings. These tools will keep both you and the students on their toes while discussing any topic. They are especially effective for students who (1) learn best in an auditory setting; (2) exhibit strength in linguistic intelligence; and (3) require active involvement in lecture or discussion setting. Each time you conduct a group discussion, try one or more of the following techniques for improving discussions. Maintain anecdotes of discussion activities to include in your journal/portfolio.

Dialogue Do's for Improving Discussions

1. *Initiate* a discussion by having students respond to an open-ended question individually and then share their ideas with a partner before discussing responses with the whole group.
2. *Organize* a discussion by having each student or small group of students write out a question or concern they have about the topic for discussion on individual file cards. Collect the cards and use these student-generated ideas as the sole basis for the discussion session.
3. *Stop* the large group dialogue at several points during a discussion and instruct students to discuss this "last major point" with a partner or small group.
4. *Pause* during a discussion session and survey students to determine how they feel about a question that has just been answered or a point that has just been raised by a peer. For example, you might ask: "How many of you agree with the answer just given by Hector?" or "Raise your hand if you think this point made by Marie is an important one to consider."
5. *Provide* each student or pair of students in a discussion group with a response tool such as a set of prescribed Yes/No cards, individual chalkboards, or set of A, B, C, D multiple choice sheets of paper. After asking a question, instruct students to signal their answers by showing you the best "response" on their prop or response manipulative tool.
6. *Keep* students on their toes by tossing a ball to a student after a question has been asked. Whoever catches the ball must respond to the question.
7. *Ask* several relevant questions of the students during a discussion and propose several different answers to each question. Have students respond to each set of questions/answers by demonstrating one of the following "body language" techniques: *a.* stand up if you think "A" is the best answer; *b.* thumbs up if you think "B" is best; *c.* raise your right hand if you think "C" is best; *d.* raise your left hand if you think "D" is best.
8. Use the *Fist of Five* strategy for students to respond to a series of discussion statements, facts, opinions, or decisions. The student responds to the idea by doing one of the following:

   a. raise hand as fist to indicate *do not agree with idea and will block idea;*

   b. raise one finger to indicate *do not agree with idea but will not block idea;*

   c. raise two fingers to indicate *am neutral on idea;*

   d. raise three fingers to indicate *agree with this idea;*

   e. raise four fingers to indicate *agree with this idea and will actively support it;*

   f. raise five fingers to indicate *agree with this idea and will lead the charge/action/discussion on this idea.*

ACTIVITY 3: D is for Discussion

An interactive discussion should be an integral part of every classroom setting. These discussions should take place in groups of varying sizes ranging from the whole class to small cooperative learning groups of two to five students. It is important, however, that discussion groups focus on a set of objectives to accomplish, on preparing individuals to take part in the discussion, and on ways to evaluate information and skills gained from the discussion. Quality discussions, then, require students to have a knowledge base with which to argue, defend, compromise, or expand on their ideas.

An outline or note-taking sheet should be completed by students that will provide them with a list of key terms, concepts, facts, conclusions, and opinions to share with others in their group. Outlines can be collected and reviewed by the teacher as a culminating task. Likewise, it is important that students also be given feedback on their social or process skills displayed during the discussion. One's ability to speak, listen, acknowledge, question, or clarify are important to the group's success, and to succeed in life these skills must be taught along with the content.

Take a few minutes to complete a note-taking sheet (p. 31) to record your facts, thoughts, experiences, feelings, and opinions on one of the four statements below. If working as a team, each member should select a different statement. Upon completion of your outline, discuss your ideas with your teammates or other professionals, using the information from your outline where appropriate.

1. *Grades encourage cheating, stifle creativity, discourage in-depth learning, and generally create an unhealthy atmosphere in the school*
2. *Grades are essential to student achievement because they motivate most students, inform parents on student progress, provide feedback on teacher effectiveness in delivering content, and make schools accountable to the public.*
3. *We should declare a five-year moratorium on the use of standardized tests.*
4. *We should provide students with report cards to evaluate their teachers in the same areas that students are assessed by those teachers*

To wind up this activity, complete the Self-Check form below. Discuss your perceptions with those of the others in your group.

Self-Check on My Contributions as a Group Member

Date _____ **Task/Activity** _____

Rating Scale: 1. Excellent 2. Good 3. Fair 4. Poor

In today's discussion I would give myself the following rating in each area:

1._____ I completed my outline to prepare for discussion
2._____ I used my outline during discussion
3._____ I contributed my ideas to the group's discussion
4._____ I listened to ideas of others during discussion
5._____ I was cooperative during the discussion.
6._____ I learned something from the discussion
7._____ I had a good time participating in the discussion.

NOTE-TAKING SHEET FOR DISCUSSION SESSION

Topic _____

Facts/statistics/findings I have uncovered about the topic

_____

_____

_____

_____

Personal experiences/examples/anecdotes from students in my class to support my position on the topic _____

_____

_____

_____

_____

Feelings I experienced when investigating this topic

_____

_____

_____

Special problems to be addressed/resolved when reaching group consensus on this topic

_____

_____

_____

Terms/concepts/resources to consider when discussing this topic

_____

_____

ACTIVITY 4: Agree/Disagree Clarification Cards

This activity calls for five students to represent different positions on a rating scale. Each student is given a large card or poster labeled with one of the following descriptors: *Strongly Agree, Agree, Don't Know, Disagree, Strongly Disagree.* The five students line themselves up in order beginning with "Strongly Agree" and ending with "Strongly Disagree" leaving large spaces between them. The other students are then asked to place themselves somewhere on the continuum depending upon how they feel about certain issues or questions raised by the teacher. The result is a human graph or visual representation of where the class stands as a group and as individuals.

The teacher/facilitator should require selected students to validate or defend their positions, especially if they represent opinions that differ widely from those of their peers. An effort should also be made by the facilitator to allow students to change their positions if others can convince them to do so through logic, examples, or explanations.

Determine where you would fall on a human graph if you were asked to react to each thought on p. 33 that relates somewhat to the assessment process. Be able to give one good reason or personal example to support your position.

Study the examples of the strategy on pp. 34-36 for determining student beliefs about various areas or topics. After students have committed themselves to a position on the human graph, have them develop a persuasive paragraph to justify their feelings on any one of the issues they feel strongly about.

Finally, think of three major topics in the subject area you are primarily responsible for or that are related to an interdisciplinary unit; then write a series of AGREE or DISAGREE statements, quotations, concepts, or positions for each topic that would require a decision as well as a rationale for that decision from each of your students.

Strongly Agree **Agree** **No Answer** **Disagree** **Strongly Disagree**

People take only their needs into consideration – never their abilities.
— Napoleon Bonaparte

Position and Rationale

It is a good answer that knows when to stop. — Italian Proverb

Position and Rationale

I am the master of everything I can explain. — Theodore Haecker

Position and Rationale

One of the most untruthful things possible, you know, is a collection of facts, because they can be made to appear so many different ways. — Dr. Karl A. Menninger

Position and Rationale

We should not only use the brains we have, but all that we can borrow. — Woodrow Wilson

Position and Rationale

Do not blame teachers or their administrators if they fail to educate, to change their students; for the task of preventing the new generation from changing in any deep or significant way is precisely what most societies require of their educators. — George B. Leonard

Position and Rationale

WHAT DO YOU THINK?

The Environment

1. Shoppers should have to bring reusable cloth bags to carry their groceries home from the supermarket or they will not be able to purchase any products.

Position and Rationale

_____

_____

2. All states should have a mandatory returnable bottle/container law even at great cost to the consumer.

Position and Rationale

_____

_____

3. Builders should be required to provide outdoor public park areas for every new housing/ condominium development they construct, and the city would have to maintain them at taxpayer's expense.

Position and Rationale

_____

_____

4. Schools should be operated year-round to save on energy costs.

Position and Rationale

_____

_____

Competition vs. Cooperation in Sports

1. Athletic competition, not cooperation, builds character.

Position and Rationale

_____

_____

2. Athletic competition is more likely to build one's confidence and self-esteem than cooperation in sports.

(What Do You Think? continued)

Position and Rationale

_____

_____

3. Competition, unlike cooperation, builds a healthy desire to avoid failure on the athletic field.

Position and Rationale

_____

_____

4. Most kids would rather engage in cooperative settings than competitive settings during physical education time.

Position and Rationale

_____

_____

Mathphobia

1. Fractions are more difficult to learn than decimals.

Position and Rationale

_____

_____

2. Calculators should replace computation by hand in today's math program.

Position and Rationale

_____

_____

3. Boys are better math students than girls in most mathematics classrooms.

Position and Rationale

_____

_____

(What Do You Think? continued)

4. Math is my favorite subject.

Position and Rationale

_____

_____

The Wisdom of Proverbs

1. Early to bed and early to rise, makes a man healthy, wealthy, and wise.

Position and Rationale

_____

_____

2. If people could have half their wishes, their troubles would double.

Position and Rationale

_____

_____

3. For everything you have missed you have gained something.

Position and Rationale

_____

_____

4. A person shows his/her character by what is laughed at.

Position and Rationale

_____

_____

III. Questioning

ACTIVITY 1: The Art and Science of Effective Questioning

According to Strong, Hanson, and Silver,* questions are the essence of "educational conversation" because good teachers may spend as much as sixty percent of their teaching time asking questions, listening to answers, and providing feedback. In view of this reality think about the many different ways that good questions can

(1) motivate students
(2) evaluate students
(3) teach students to think
(4) invite students to take risks
(5) challenge students to discover ideas
(6) provide students with ways to rehearse previously learned knowledge/skills

With these ideas in mind, jot down on the next page some personal thoughts about these concepts as they relate to the "art and science of questioning."

After completing brief responses to those questions, take time to use your thoughts and create some responses to each of the four questions that follow. When working as a team, the collaboratively developed responses become in effect the team's new strategies for improving questioning.

1. How can we get students to participate more actively in the question and answer process?
2. How can we increase the chance that students will interpret our questions correctly?
3. How can we help students maintain focus and use their memory in answering questions?
4. How can we increase the depth of students' answers?

*Strong, R. W., Hanson, J. R., & Silver, H. F. (1980). *Questioning styles and strategies: Procedures for increasing the depth of student thinking.* Moorestown, NJ: Hanson, Silver, Strong & Associates.

Personal Comments on the Art and Science of Questioning

1. How is a question a social act?

2. How is a question a language act?

3. How is a question a relationship?

4. How is a question an invitation to think?

5. How is a question an answer seeker?

---

1. How is an answer a response to a request?

2. How is an answer an act of interpretation?

3. How is an answer a relationship?

4. How is an answer the product of thought?

5. How is an answer a response seeker?

---

1. How are questions and answers alike?

2. How are questions and answers social?

3. How are questions and answers relational?

4. How are questions and answers incomplete?

ACTIVITY 2: Questions That Count

Read and review the excerpt "Questions That Count" below to provide the rationale for using questioning techniques that develop students' ability to reason and think at higher levels of the taxonomy.

Then prepare a lesson, a discussion session, or a lecturette related to a unit in progress or planned that includes a wide variety of question types using either the Question Outline (pp. 40-42) as a format or Riegle's Question Classification System (pp. 43-44) as an organizing structure. Take time to review these formats.

Finally, code each question in the materials you prepared according to its questioning label or category from either the Question Outline or the Riegle System. Tally the types of student responses to these questions using the seven criteria identified by Gall*.

Questions That Count

A teacher's willingness to use questioning techniques in a variety of different contexts and according to a taxonomy of higher order thinking skills is important in helping students develop the ability to reason. According to Gall, a teacher can tell whether student responses are of quality or not by using these seven criteria:

Clarity
The student responds in clear English without hesitation, failing to finish, or confusing his/her thoughts.

Accuracy
The answer contains no factual errors and is based on correct information.

Appropriateness
The student answers the question that was asked and doesn't talk around it.

Specificity
The student gives reasons, facts, or examples to support his/her statement, or he/she explains the criteria or assumptions on which he/she bases his/her opinion.

Support
The student gives reasons, facts, or examples to support his/her statement, or he/she explains the criteria or assumptions on which an opinion was based.

Complexity
The student's answer shows that he/she is aware that there are many ways of looking at the problem being discussed, and that he/she must consider before a valid judgment can be reached.

Originality
The learner draws upon current knowledge and past experience to create or discover ideas that are new.

*Gall, M. D., *What effects do teachers' questions have on students?* Paper presented at the Annual meeting of the American Educational Research Association, New Orleans, LA, in February, 1973.

QUESTION OUTLINE

Quantity Questions

1. List all of the _____.
2. List as many _____ as you can think of.
3. How many ways can you come up with to _____?

Reorganization Questions

1. What would happen if _____ were true?
2. Suppose _____ (happened), what would be the consequences?
3. What would happen if there were no _____?

Supposition Questions

1. Suppose you could have anything you wanted in working on this. What ideas could you produce if this were true?
2. You can have all of the _____in the world. How could you use it to _____?
3. How would _____view this?

Viewpoint Questions

1. How would this look to a _____?
2. What would a _____mean from the viewpoint of a _____?
3. How would _____view this?

Involvement Questions

1. How would you feel if you were _____?
2. If you were _____, how would you (see, taste, smell, feel)?
3. You are a _____. Describe how it feels.

Forced Association Questions

1. How is _____like _____?
2. What is the topic sentence of this paragraph?
3. I only know about _____. Explain _____to me.

Main Idea

1. In your own words, what is the most important idea in this sentence (paragraph, picture, selection)?
2. What is the topic sentence of this paragraph?
3. What would be a good headline or title for this paragraph?
4. Which of the two titles I gave you (supply two) would be the better headline?

General - Specific

Give students a general statement from a story or book they have read. Have them find information in the story to support or refute the statement.

(Question Outline, continued)

Example: Jerry was always getting into trouble.
Possible Responses:
1. Jerry's mother became angry when he tracked up her newly waxed floor.
2. Jerry's teacher became upset when he pulled a little girl's hair.

Fact or Opinion

1. Select a series of statements from a selection. Ask students to tell whether each is fact or opinion and why they classified it as such.
2. What is the main point of the author's argument? Does he use fact or opinion to support his position? Cite examples from the selection to prove your answer.

Similes, Metaphors, Figures of Speech

1. In the sentence what does the phrase _____mean?
2. Can you substitute something else to convey the same meaning?
3. Do the words in the simile (metaphor, figure of speech) mean the same when they are used together this way as they do when each is used separately?

Summarizing

The main objective there is for the student to express clearly and concisely what a given selection or portion of a selection is about. Questions might include

1. Can you tell in one sentence what this whole page is about?
2. Can you tell in two to three sentences what the whole story (book) is about?
3. Can you tell in one sentence what the whole story is about? (Here you're asking the student to state the theme so the sentence should be complete enough for the purpose.)

Subordinate Ideas

1. What facts are given to show that _____?
2. What sentence answers the following question?
3. What details support the main idea?

Roots, Prefixes, Suffixes

1. What is the meaning of _____ in this sentence?
2. Can you give me the meaning of this word without the _____ (prefix, suffix)?
3. What word could you substitute for _____?
4. How does the meaning of the sentence change if we eliminate the _____ (prefix, suffix)?

Classification of Words and Phrases

Have students suggest a list of words or phrases from a story or book they have read. Have them classify them by one or more of the following:

1. Meaning
2. Function
3. Number of syllables
4. Vowel sounds
5. Other (student suggested and teacher approved)

(Question Outline, continued)

Cause-Effect Relationships

1. Why did _____?
2. What would happen if _____?
3. What happened because _____ did _____?

Note: Whenever possible, develop the concept of multiple causation.

Key Qualifying Words

A key qualifying word is one which controls the meaning of a sentence. For example, in the sentence, *Horace fell in the deep water*, "deep" is a key qualifying word.

1. What is the meaning of _____in that sentence?
2. How would it change the meaning if we substituted _____ (supply word) for this word?
3. Can you substitute a word for _____ that gives the sentence approximately the same meaning?
4. Would the sentence make sense if we omitted the qualifying word? Would the meaning change? How does the qualifying word emphasize the sentence meaning?

Analogy

When a reading selection contains an analogy, ask students to state it. Use questions such as

1. How does the author describe _____ on page _____?
2. What did the author mean when he said _____ was like _____?
3. Could you say this in another way that would mean approximately the same thing?

Construct a Diagram from Printed Information

When a reading selection describes a location, have students construct a simple drawing to show how people and places relate to each other.

Context

1. What is the meaning of _____ in this particular sentence?
2. Can you substitute another word for _____ in that sentence without changing the meaning?
3. Do you know some other meanings for this word (phrase)?
4. What word means the opposite of _____?
5. What new meaning can you learn for _____?

Drawing Conclusions

1. Stop at a certain point in the story and ask, "What do you think will happen next?"
2. Based on this story, what kind of person do you think _____was?
3. How do you think this story will end?

Author's Purpose

1. Why do you think the author wrote this story (book)?
2. What do you think the author was trying to prove when he wrote this?
3. How do you think the author wanted you to feel as you read this?

Riegle's Question Classification System*

I. **Empirical:** Questions about the world and our experiences of it.

A. **Causal:** Questions about the cause of something.

Why did the pond freeze?
What caused World War I?

B. **Teleological:** Questions about someone's purpose, aim, or goal.

Why did the President of the U. S. visit China?
Why did our athletes prefer Atlanta as the site of the 1995 Summer Olympics?

C. **Functional:** Questions about something's function.

Why does the liver secrete bile?
What is the function of the pancreas?

D. **Non-Normative Judgment:** Requests for an estimate, prediction, ranking, or grading, but not of value judgments.

How far is the green?
Who will win the election?
Is the second note higher or lower than the first?

E. **Descriptive:** Requests for descriptions.

1. Requests for properties or characteristics.

What color is it?
What are the properties of iron?

2. Requests for examples.

What are some examples of homonyms?
Give me a substance that dissolves in water.

3. Requests for classifications.

Is NaOH an organic or inorganic compound?
What class of animals does the cat belong to?

4. Requests for labels or names.

Who is the President of France?
Which part of the brain is the lowest?

5. Requests for summaries.

Summarize Chapter Three.
What were the major points of this book?

6. Requests for reviews.

What have we said so far?
What did the author say about ecology?

7. Requests for procedures or processes.

How is sulphur mined?
How did you get the answer to this problem?

*Riegle, R. P. (1976). Classifying classroom questions. In K. A. Strike (Ed) *Philosophy of education 1976.* Urbana, IL: Philosophy of Education Society.

(Riegle's Question Classification System, continued)

8. Requests for chronological sequences.
   List in chronological order the events leading up to World War I.
   What sequence of events preceded Coolidge becoming President?
9. Requests for relationships.
   What is the relationship between the Big Dipper and the North Star?
   How is spelling ability related to reading ability?
10. Requests for comparisons.
   Compare Alabama to Auburn.
   What do these words have in common?
11. Requests for contrasts.
   Contrast materialism with idealism.
   What is the difference between organic and inorganic compounds?

II. **Analytic:** Questions about the relationships between verbal, logical, or mathematical symbols.
   A. *Linguistic:* Requests for definitions or the relationship between words.
      Define "placid."
      What does "ambiguous" mean?
   B. *Logical:* Requests for the laws of logic or the relationship between logical symbols.
      Why is this argument invalid?
      Does that conclusion follow?
   C. *Mathematical:* Requests for the laws of mathematics or the relationship between mathematical symbols.
      What is 6x7?
      Why does angle A plus angle B equal 180 degrees?

III. **Normative Judgment:** Requests for evaluations, obligatory judgments, or justifications.
   Was Gerald Ford a good president?
   Should Schindler's List be banned from the school's curriculum?

IV. **Preference:** Questions about likes and dislikes.
   Do you like ice cream?
   Don't you like coming to school?

V. **Metaphysical:** Questions about supernatural beings, events, etc., which have no agreed upon method for arriving at an answer.
   Is the glass half full or half empty?
   Why is there something rather than nothing?

ACTIVITY 3: Using Bloom's Taxonomy As a Tool for Improving Questioning Techniques

Study carefully the following material that presents a fairly detailed overview of Bloom's Taxonomy and its potential value for designing more effective questions in a classroom setting.

Bloom's Cognitive Taxonomy as an Instructional Tool

In the late 1940s a dedicated group of scholars led by Benjamin Bloom decided that both a structure and a clarification were needed in classifying educational objectives that teachers had developed for students. It was argued that a system for classifying objectives would provide a common framework for educators to use when determining the types of desired changes in student behavior as learning takes place.

In the process of working on a structure to categorize objectives, this group of scholars recognized that all objectives have two key parts: specification of content and the ways students are to respond to that content. The authors of the taxonomy chose to analyze and classify the behavior portion of the objective rather than the content portion. Classifying content had already been achieved through the Dewey Decimal System and the Library of Congress (Purdom, 1984).

In classifying objectives, scholars made three basic assumptions about knowledge. They first assumed that there are a multitude of behaviors found in objectives that could be represented by a relatively small number of major categories. Secondly, they assumed that the type of student behaviors specified in one subject or field of study would be applicable to other subjects or fields of study. Finally, they assumed that behaviors specified in objectives are likely to be the same for different levels of schooling.

Because most of the objectives in schooling are changes in thinking or cognitive behaviors, the scholars first worked to classify objectives in this domain. Later, however, they discovered that there are other classifications of objectives which will be referred to later on as the *affective* or *feeling* domain and the *creative* or *productive thinking* domain.

It should be noted, however, that the taxonomies for each domain – thinking, feeling, and creating – are important for several reasons. First, they provide educators with precise descriptions of different kinds of student behaviors, even going so far as to identify some terms to use that signify distinct differences in those behaviors. Too, they encourage construction of objectives with a broad range or scope and sequence of skills. In addition, they serve as a basis for developing and analyzing questions teachers ask students which, in itself, can be a useful tool for generating different levels of thinking. Finally, the taxonomies serve as a basis for diagnosing and prescribing instruction since the student must master one level before proceeding to the next.

In this challenging age of information it is very important that we redefine Bloom's Taxonomy of Cognitive Development in terms specifically related to the student needs of the 21st century. The six identified levels in this thinking domain can be summarized in the following "information" statements:

Knowledge Level Objectives… require the student to learn the information.

Comprehension Level Objectives … require the student to understand the information.

Application Level Objectives ... require the student to use the information.

Analysis Level Objectives ... require the student to examine specific parts of the information.

Synthesis Level Objectives ... require the student to do something new and different with the information.

Evaluation Level Objectives ... require the student to judge the information.

Although most teachers have encountered Benjamin Bloom in their undergraduate and graduate teacher education programs, few individuals really understand the key distinctions among the levels. Below are a series of clarifying statements which may prove helpful for teachers to review when thinking about the cognitive domain.

Knowledge Level Objectives

1. At the knowledge level, a student is not expected to make use of the information acquired. He/she is only required to restate it.
2. Some types of knowledge are more difficult to recall than others. It is easier to list the primary colors, for example, than it is to list the elements of the periodic table, although both tasks are knowledge level activities. It is the content that varies in sophistication.
3. Knowledge objectives are important to master. All students need a minimal data base in order to perform higher level thinking skills.
4. For a knowledge level response to occur, the learner must be given cues and signals similar to those used in the original learning situation.
5. Simply being able to recall something without understanding what it means can be called learning.
6. The major mental operation involved at the knowledge level is remembering either by recall or recognition.

Comprehension Level Objectives

1. Achieving at the comprehension level of thinking enables the learner to use the idea or material studied in some way.
2. There are three types of comprehension behavior in the taxonomy: translation, interpretation, and extrapolation. Translation requires the learner to rephrase or restate a communication in his/her own words – to put it into a form other than the original form in which it was learned. Interpretation requires the learner to identify the major ideas in a communication and understand how various parts of the message are interrelated. Extrapolation requires the learner to do something "extra" with the material or event that is comprehended. That is, the learner can determine implications, identify consequences, draw conclusions, or make inferences that are in keeping with the information contained in the communication.

Application Level Objectives

1. A major difference between a comprehension and an application response is not merely that in application the student can use what is learned. For a response to be considered application, the student must use the information in a context or setting different from the one in which it was taught. Application objectives imply a real transfer of training to a new and novel problem, situation, or experience whereas comprehension objectives only imply a use of the idea or thing learned.
2. It is not acceptable to give learners hints or cues in any way when checking them for application level thinking.

Analysis Level Objectives

1. Analysis level tasks require the learner to do such things as read between the lines, find subtle implications, or complete a logical dissection of a communication.

2. Analysis level tasks, on the other hand, do not require the learner to do such things as explain or summarize a communication, restate in one's own words the basic ideas of a communication, change the communication into another form without altering its basic meaning, or add something new and different to the communication that would alter its intent.

Synthesis Level Objectives

1. Synthesis responses require an intellectual process that is just the opposite or reverse of analysis. Synthesis requires the putting together of ideas in a new way while analysis involves dissecting or breaking apart the ideas of a given communication.
2. Only some creative acts qualify as acts of synthesis because some creative acts are spontaneous and have not involved careful thought and planning in their creation. Synthesis is not creativity that occurs from intuitive responses but rather creativity that is part of a conscious deliberation to produce something new and different.
3. Although one criterion for thinking at the synthesis level is the creation of a new, unique, and original product, it should be noted that it does not have to be unique or original in terms of all human culture. As long as it is new for the learner who produced it, the product can be considered an act of synthesis for that learner.

Evaluation Level Objectives

1. Stating an opinion of something is not necessarily an evaluation level response because an opinion can be given without careful thought or without applying criteria to justify a response.
2. Performing at the evaluation level requires the student to consider alternatives in making a judgment, to establish criteria for judging those alternatives, and to demonstrate a validation process for defending that final judgment or choice among the established alternatives.
3. Criteria or standards to be used in making an evaluation include criteria for judging that are explicit; criteria used in judging that are generated by the student; and criteria that are used in a decision which are accompanied by thoughtful justification. (Purdom, 1984, pp. 2-38)

A self-inventory

Gene Gallelli (1977) developed a very simple, but effective Activity Mindset Self-Inventory for educators to take periodically in assessing both their understanding and application of Bloom's Taxonomy for designing classroom instructional activities. To determine your Bloom Activity Mindset Self-Inventory, complete the inventory according to the directions given. Try using the tasks or assignments related to your plans for any given week or day. List those activities you most commonly ask your students to do as a regular part of your instructional program.

Anyone responsible for designing instructional materials and strategies would benefit from taking this Bloom Activity Mindset Score on a monthly basis to help keep themselves on track when presenting basic concepts or skills to students. Too often, in this age of accountability, we find ourselves failing to move beyond the knowledge and comprehension levels primarily because that is what is most consistently measured on either standardized achievement test instruments or state assessment test instruments.

FINDING YOUR A.M.I. SCORE

*STEP ONE — Total the number of verbs in Part II and enter total on B _____

1

2

STEP TWO — After assigning a value to each verb from the lists in Part III, total the values and enter total on A _____

STEP THREE — Divide the total from A by the total from B. Round to the nearest tenth.

ToA - ToB = AMS

AMS = _____

3

4

STEP FOUR — Compare your results with the interpretation charts.

STEP FIVE — (Optional) Take the inventory again in a week, month, year — and compare the results

5

Now about your score .....

If your activity mindset score (AMS) is:

5.0+	INCREDIBLE: Your kids are probably spending a good deal of time with processes of creative behavior. Also, they are making judgments about ideas, conditions, and objects.
4.0 - 4.9	BRAVO: Your activities, also, include a share (to a lesser degree) of the things mentioned above. Your kids are probably getting heavier concentrations of "breaking things down into component elements."
3.0 - 3.9	HANG IN THERE: Application and analysis are important. Up! Up!
2.0 - 2.9	GRAB ON: All of that knowledge, comprehension, and application are a stairway leading to HIGHER places!
1.0 - 1.9	OOPS: There's more to life than remembering, restating, and rearranging.

Source: Gene Gallelli, *Activity Mindset Guide*. DOK Publishers, 1977, PO Box 605, East Aurora, NY

Activity Mindset Self-Inventory

Part I: Activities: List an activity for each *category you might have your class do tomorrow.

READING _____

SPELLING _____

SCIENCE _____

MATH _____

SOCIAL STUDIES _____

LANGUAGE _____

*If you are a science teacher, list all science activities; a reading teacher, all reading activities, etc.

**Of course, not all applicable words can be listed. Words that are close to, or synonymous with, words in a particular group would receive the value of that group.

Part II: "Verbing Up."

Circle all the verbs (action words or phrases) you used writing your activities. List them below, one to a line.

Verbs	Values
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

[B] Total number of verbs

[A] Total of values

Part III: "Verbarama"

**Locate verbs and assign values accordingly.

List **A** — Value 1 (one)
lists tells labels
points to picks tallies
recites locates selects
quotes defines names

List **B** — Value 2 (two)
translate explain retell
change illustrate reword
interpret project shows
propose rearrange reorder

List **C** — Value 3 (three)
use solve apply employ
utilize make use of
mobilize exploit operate
manipulate ply practice

List **D** — Value 4 (four)
examine dissect divide
take apart investigate
discuss uncover simplify
deduce conclude extract

List **E** — Value 5 (five)
combine create develop
recombine make compose
fashion systematize

List **F** — Value 6 (six)
judge assess appraise
rates weighs evaluate

Source: Gene Gallelli, Activity Mindset Guide. D.O.K. Publishers, 1977. P.O. Box 605, East Aurora, NY

The tools and techniques located on the next several pages provide other ways to more consistently incorporate Bloom's Taxonomy as an integral part of your instructional program. They should be studied carefully and tried out in the classroom where applicable.

1. The first tool (pp. 51-53) is a chart that should be in the front of every teacher's planning book or otherwise readily available when constructing worksheets, test questions, or mini-units. The Bloom Action Verbs for Classroom Action Chart, although long, provides a quick overview of the levels of the thinking taxonomy along with a set of behaviors for each of the corresponding levels. A concerted effort should be made to structure questions, tasks, or activities that touch all levels of the taxonomy and offer students a regular challenge for stretching their minds and teasing their imaginations.

2. The second tool (pp. 54-55) is a sample lesson plan. These ideas were adapted from an excellent publication entitled *SOAR: A Program for the Gifted Using Bloom's Taxonomy.** The Bloom Project Chart shows how each level of learning can lead to a student product when the teacher is writing a given set of tasks or questions. The sample lesson plan shows the teacher a model for using the taxonomy to structure questions following a video to better ensure student understanding of material presented.

3. The third tool (pp. 56-57) is a generic outline for developing a unit on any topic. It is intended for the teacher to use when constructing a task sheet that gives student directions for completing an independent research project or report. The students may collaborate in preparing the task sheet. By combining any one of the tasks from each of the six taxonomy levels, the teacher can be assured of providing options for students in their research or reporting efforts.

4. The fourth tool (pp. 58-60) is an innovative way to create worksheets or independent project task sheets for students using the taxonomy in a graphic and visual manner. How much more interesting for the student is this "busy" workbook page than the more traditional approach. These worksheets can be used in a variety of ways.

   Try giving the worksheet to a small group of students to complete as part of a group project. Try giving the worksheet to an individual student for reinforcement or enrichment purposes. Try giving the worksheet to a student and instruct him/her to do only selected tasks at selected levels. Try giving the worksheet to a student as an alternative way to learn a basic skill or set of concepts other than from the textbook as a delivery system. Although the graphics are important, it is even more critical that the worksheets represent only one task for each level of the taxonomy and that each level is indeed represented. The graphics can be nothing more than borders, symbols, stick figures, or clip art to break up the monotony of the copy. Using this gimmick as an instructional tool can be very effective in the middle grade classroom setting. Try it, you'll like it!

*Reid, C., & Reid, J. (1956). *SOAR: A Program for the Gifted Using Bloom's Taxonomy.* Rolling Hills Estates, CA: B. L. Winch and Associates.

Bloom Action Verbs for Classroom Action

KNOWLEDGE: Knowledge is defined as the remembering of previously learned material. This may involve the recall of a wide range of material, from specific facts to complete theories, but all that is required is the bringing to mind of the appropriate information. Knowledge represents the lowest level of learning outcomes in the cognitive domain.

RELATED ACTION VERBS

acquire	follow	locate	quote	reproduce
choose	directions	match	read	select
count	group	memorize	recall	state
define	identify	name	recite	tabulate
distinguish	indicate	outline	recognize	trace
draw	know	pick	record	underline
fill in	label	point	repeat	write
find				

COMPREHENSION: Comprehension is defined as the ability to grasp the meaning of material. This may be shown by translating material from one form to another (words to numbers), by interpreting material (explaining or summarizing), and by estimating future trends (predicting consequences or effects). These learning outcomes go one step beyond the simple remembering of material, and represent the lowest level of understanding.

RELATED ACTION VERBS

account for	distinguish	generalize	paraphrase	reword
associate	draw	give in	predict	rewrite
change	estimate	own words	prepare	restate
classify	expand	give	put in	show
conclude	explain	examples	order	simplify
compare	express	group	read	suggest
contrast	in other	infer	rearrange	summarize
convert	terms	illustrate	recognize	trace (*on map or*
demonstrate	extend	interpolate	reorder	*chart*)
describe	extrapolate	interpret	reorganize	transform
determine	fill in	measure	represent	translate
define	find	outline	retell	
differentiate				

APPLICATION: Application refers to the ability to use learned material in new and concrete situations. This may include the application of such things as rules, methods, concepts, principles, laws, and theories. Learning outcomes in this area require a higher level of understanding than those under comprehension.

(Bloom Action Verbs, continued)

RELATED ACTION VERBS

apply
calculate
choose
classify
collect *(information)*
complete
compute
construct
construct *(using)*
convert *(in math)*
differentiate between
demonstrate
derive
determine *(calculate)*
develop
discover
discuss
distinguish between
employ
estimate
examine
expand
experiment
express in a discussion
find *(implies investigation)*
generalize
graph
illustrate
interpret
interview
investigate
keep records
locate *(information)*
make
manipulate
model
modify
operate
organize
participate
perform *(except in math or in public)*
plan
practice
predict
prepare
present
produce
prove *(in math)*
put into action
put to use
put together
record
relate
restructure
select
show
solve
track *(in development, history, process)*
transfer
translate
use
utilize

ANALYSIS: Analysis refers to the ability to break down material into its component parts so that its organizational structure may be understood. This may be relationships between parts, and recognition of the organizational principles involved. Learning outcomes here represent a higher intellectual level than comprehension and application because they require an understanding of both the content and the structural form of the material.

RELATED ACTION VERBS

analyze
break down
categorize
classify
compare
contrast
criticize
debate
deduce
detect
determine
diagram
differentiate
discover
discriminate
distinguish
divide
draw conclusions
examine
formulate
form generalizations
examine
group
identify
illustrate
infer
inspect
make inferences
order
outline
point out
put into *(categories)*
recognize
relate
search
select
separate
simplify
sort
subdivide
survey
take apart
transform
uncover

SYNTHESIS: Synthesis refers to the ability to put parts together to form a new whole. This may involve the production of a unique communication (theme or speech), a plan of operations (research proposal), or a set of abstract relations (scheme for classifying information). Learning outcomes in this area stress creative behaviors, with major emphasis on the formulation of new patterns or structures.

(Bloom Action Verbs, continued)

RELATED ACTION VERBS

arrange	derive	integrate	prescribe	revise
blend	design	invent	present *(an*	rewrite
build	devise	make up	*original report*	specify
categorize	develop	modify	*or work)*	suppose
combine	document	originate	produce	summarize
compile	explain	organize	propose	synthesize
compose	form	perform *(in*	rearrange	tell
constitute	formulate	*public)*	reconstruct	transmit
construct	generalize	plan	relate	write
create	generate	predict	reorganize	
deduce	imagine	prepare		

EVALUATION: Evaluation is concerned with the ability to judge the value of material (statement, novel, poem, research report) for a given purpose. The judgments are to be based on definite criteria. These may be internal criteria (organization) or external criteria (relevance to the purpose) and the students may determine the criteria given them. Learning outcomes in this area are highest in the cognitive hierarchy because they contain elements of all of the other categories, plus conscious value judgments based on clearly defined criteria.

RELATED ACTION VERBS

appraise	consider	determine	interpret	standardize
argue	contrast	discriminate	measure	summarize
assess	criticize	distinguish	rank	support
award	critique	evaluate	rate	test
choose	decide	grade	recommend	validate
compare	defend	judge	relate	verify
conclude	describe	justify	select	

Generic Questions Using Bloom to Assess Student Understanding of Information Presented in Audio-Visual Format

Have students view a videotape on a topic and answer a selection of the following questions.

TAXONOMY LEVEL:	Knowledge
STARTER VERBS:	Write, List, Recall, Name
SAMPLE QUESTIONS:	List three facts you learned from the videotape. Name three major ideas you want to remember from the videotape Write down one concept from the videotape that you don't understand or want to know more about.
TAXONOMY LEVEL:	Comprehension
STARTER VERBS:	Explain, describe, summarize, restate
SAMPLE QUESTIONS:	In your own words, summarize the main theme or purpose of this videotape Explain how you might use the information in this videotape to improve your understanding of … Draw a diagram, picture, or cartoon to illustrate an important concept from the videotape.
TAXONOMY LEVEL:	Application
STARTER VERBS:	Demonstrate, prepare, discuss, expand on
SAMPLE QUESTIONS:	With a friend, discuss one idea from the videotape that is of interest to both of you. Prepare a two level outline on the major facts presented in the videotape Expand on this concept identified in the videotape…
TAXONOMY LEVEL:	Analysis
STARTER VERBS:	Compare/contrast, criticize, survey, form generalizations
SAMPLE QUESTIONS:	Compare and contrast two different ideas from the videotape. Criticize some aspect of the videotape and recommend how it might be improved. Survey other members of the class to determine what they liked most about the videotape.

(Generic Questions, continued)

TAXONOMY LEVEL:	Synthesis
STARTER VERBS:	Create, design, imagine, make up
SAMPLE QUESTIONS:	Make up a new title for the videotape Design a textbook page based on the ideas presented in the videotape Imagine how each of the following individuals would react to the information in this videotape: parent or guardian, media specialist, science/social studies teacher, college student
TAXONOMY LEVEL:	Evaluation
STARTER VERBS:	Critique, judge, rank, rate
SAMPLE QUESTIONS:	On a one to five scale (with one being excellent and five being poor) how would you rate this videotape and what criteria would you use? Collect five facts presented in this videotape from your friends and rank order them from most important to least important. Be able to give three reasons for your first choice. Critique the videotape and write down one recommendation you would like to pass on to its producer.

Generic Outline for Developing a Unit on Any Topic or Problem

Select one or more tasks from each level of Bloom's Taxonomy below to create a special teaching and learning unit on a topic of your choice. This activity could be done with student and teachers planning collaboratively.

TOPIC_____

DATE UNIT STARTED_____

DATE UNIT COMPLETED _____

KNOWLEDGE

1. List five-ten questions you would like to find out about your topic.
2. Identify five-ten key words or terms related to your topic. Write out their definitions.
3. Name three-five specific sources where you could find information about your topic.
4. Write out ten interesting facts about your topic.

COMPREHENSION

1. Outline a plan for finding out all you can about your topic.
2. Summarize what it is you would like to know most about your topic.
3. Describe five-ten different ways you might share acquired information about your topic.
4. Explain two key ideas or concepts about your topic in a one-page paper.

APPLICATION

1. Interview someone who knows about your topic. Record both questions and answers used as part of the interview process.
2. Make a model to show something important about your topic.
3. Conduct an experiment or investigation to demonstrate a key idea related to your topic.
4. Demonstrate or show how some aspect of your topic can be important in a real life situation.

ANALYSIS

1. Compare and contrast some aspect of your topic with that of another. How are they alike and how are they different?
2. Divide your topic into several sub-topics.
3. Survey individuals to determine what they know and what they don't know about your topic.
4. Diagram a flow chart or web to show the many ideas related to your main topic.

(Generic Outline, continued)

SYNTHESIS

1. Make up a list of predictions related to your topic.
2. Compose a poem or story about your topic.
3. Design a series of original drawings or cartoons to show facts about your topic.
4. Create a "Chalk Talk" or "Transparency Talk" to tell others about your topic.

EVALUATION

1. Determine the five most important facts you learned about your topic. Rank order them from most important to least important giving reasons for your first choice.
2. If you were to give an award to someone who made a contribution to your topic, who would you choose and why?
3. Criticize some resource you used to find out more information about your topic and give at least three recommendations for improving it.
4. Select a statistic, quotation, or fact related to your topic and support its validity or lack of validity.

Fractions

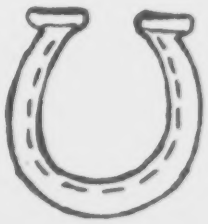
Knowledge: Make a list of ten fractions that are all equal to 3/_.

Comprehension: Make a poster that explains the six different kinds of fractions. Give several examples of each type. Make it attractive!

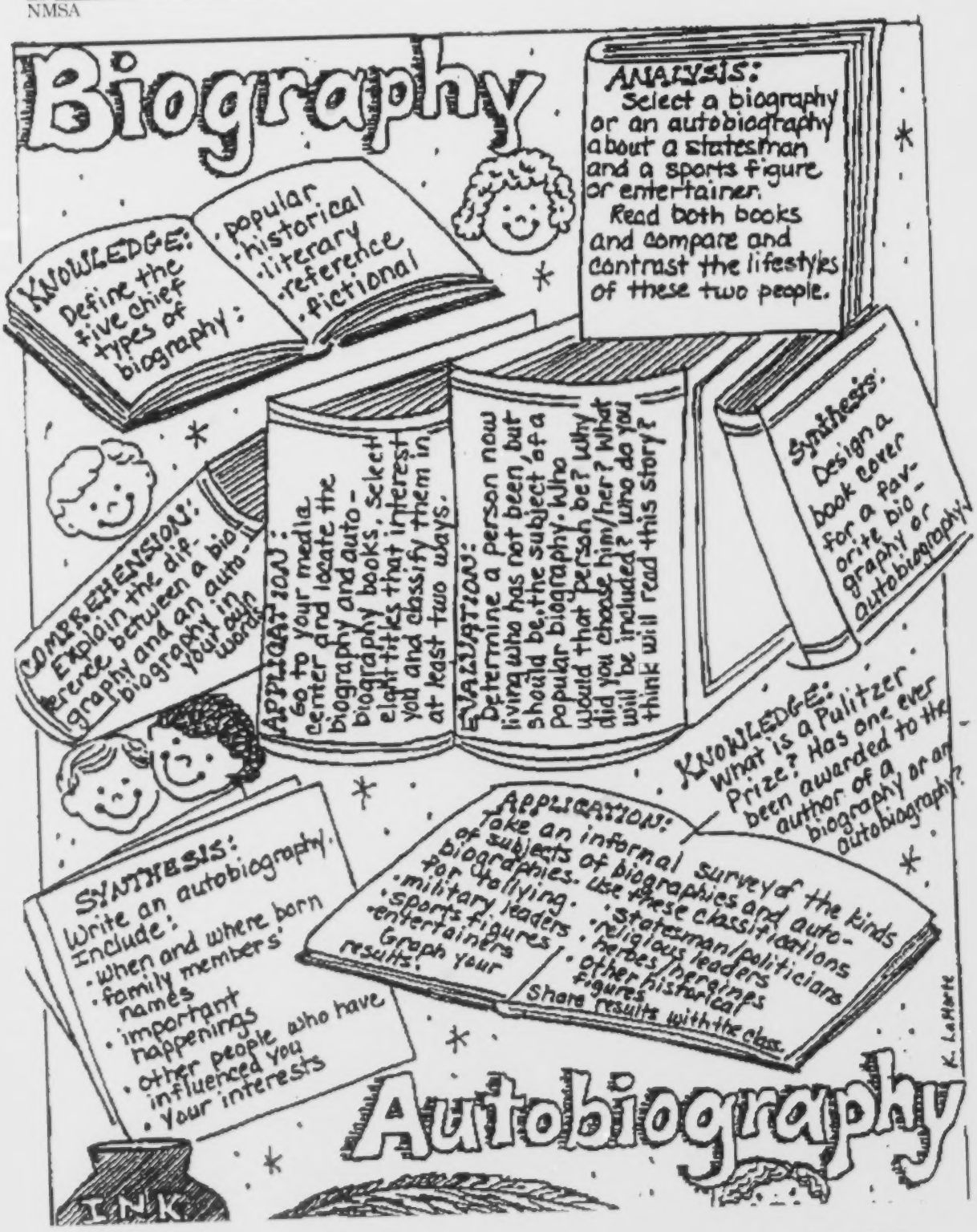
Application: Make a dot-to-dot puzzle with fraction problems as the guide. For each dot there should be a corresponding equal fraction problem with a missing numerator or denominator. The missing number will serve as the guide.

Analysis: Compare the four operations (+,-,x, $\frac{\cdot}{\cdot}$) of fractions and rank them in order of difficulty. Explain your reasoning.

Synthesis: Invent a fraction that turns your name into a fraction. Use numbers instead of letters (like a code). Make the numerator your first name and the denominator your last.



Evaluate: Imagine there were no fractions. Everything would be all or nothing! Write a paragraph that justifies our need for fractions. Give at least three examples of things you would no longer be able to do.


Biography
KNOWLEDGE:
Define the five chief types of biography:
·popular
·historical
·literary
·reference
·fictional
ANALYSIS:
Select a biography or an autobiography about a statesman and a sports figure or entertainer.
Read both books and compare and contrast the lifestyles of these two people.
COMPREHENSION:
Explain the difference between a biography and an autobiography in your own words.
APPLICATION:
Go to your media center and locate the biography and autobiography books. Select eight titles that interest you and classify them in at least two ways.
EVALUATION:
Determine a person now living who has not been, but should be, the subject of a popular biography. Who would that person be? Why did you choose him/her? What will be included? Who do you think will read this story?
Synthesis:
Design a book cover for a favorite biography or autobiography.
KNOWLEDGE:
What is a Pulitzer Prize? Has one ever been awarded to the author of a biography or an autobiography?
APPLICATION:
Take an informal survey of the kinds of subjects of biographies and autobiographies. Use these classifications for tallying.
·statesman/politicians
·religious leaders
·heroes/heroines
·other historical figures
·military leaders
·sports figures
·entertainers
Graph your results.
Share results with the class.
SYNTHESIS:
Write an autobiography.
Include:
·when and where born
·family members' names
·important happenings
·other people who have influenced you
·your interests
Autobiography
T.N.K.
K. LaMorte

BEST COPY AVAILABLE

Laughter
Ha Ha Ha
KNOWLEDGE: Use your thesaurus. Locate as many synonyms for the word "laughter" as you can.
COMPREHENSION: Give several examples of things that make you laugh!
SYNTHESIS: Tell or write about the funniest experience you have ever had or have ever seen.
SYNTHESIS: Design a T-shirt or a BUMPER STICKER or a greeting card that would make people laugh.
Ho Ho Ho
APPLICATION: Group the synonyms you found in your thesaurus in two or more categories based on any criteria you choose.
ANALYSIS: Select four to six cartoons that you think are funny. Predict which one you think the class will think is the funniest. Poll the class, graph the results. Were you correct in your predictions?
Did you hear the one about...
Hee Hee Hee
ANALYSIS: List as many actors/actresses as you can who are known for their humor. Classify them according to the following types of humor: language, slapstick, delivery, situation.
Select magazine pictures that illustrate laughter. Cut out and arrange in a collage.
ANALYSIS: Determine what percent of the programs in your TV schedule are comedies. What percent of TV time do you devote to comedies? Does
If you were presenting an award for the best comedy actor or actress, who would it be? List four reasons why you chose this person.
EVALUATION
K. Lafferty
S. Lewis

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ACTIVITY 4: Bloom Constructed Tests

Bloom's Taxonomy can be used as a format for designing two different versions of a test that could be administered to students in any subject area or interdisciplinary unit. They provide an interesting way to utilize a more sophisticated view of questions.

The first test format calls for only six questions, one for each level of the taxonomy. The lower level questions have fewer point values and just require right or wrong answers. The upper level questions, by contrast, have higher point values and encourage creative thinking with open-ended responses. On pp. 62-64 are samples of such a format from mathematics, social studies, and English. The format can just as readily be used when the class is engaged in a more integrated curriculum unit.

The second test format has several questions for each level of the taxonomy and requires students to select the questions they want to answer. Each level has a different point value, and students must select a total number of questions that yield 100 points. You can imagine the excitement of students when they get to pick which questions to answer! An example of this intriguing format is a science test found on pp. 65-66.

After studying these formats, create a test on any concept you will be teaching in the near future using one of the formats. Try it out with your students and see how they do and how they react. The resulting dialogue should increase students' awareness and understanding of level of thought. If possible, of course, it would be desirable to use the second version in a test as well.

Finally, determine your own understanding of key assessment terms and procedures by completing the six question pretest on page 67.

Classroom Application

MATHEMATICS: Zero

KNOWLEDGE (10 points). Identify the place values of the following zeros:

1071 160 307 40218 103785

COMPREHENSION: (10 points). In your own words, explain the zero properties of addition, subtraction, multiplication, and division.

APPLICATION (15 ponts) Interpret these "zero" phrases:
What does it mean when we tell somebody to "zero in on..."?

What does it mean when we refer to the "zero hour..."?

What does it mean when we say there is "zero visibility..."?

ANALYSIS (15 points). Determine what the following "zero" words mean to you and infer which ones have positive connotations and which ones have negative connotations. Write your conclusions in paragraph form.

zip zilch none naught nothing cipher nonentity

SYNTHESIS (25 points) Create a new numerical symbol to replace (0) zero. Design at least one addition, subtraction, multiplication, and division problem at your instructional level using the new symbol. Supply the answers as well.

EVALUATION (25 points) Test the theory that number problems containing a zero (0) are more difficult to compute than number problems without a zero (0). Consider all four operations as well as their use with whole numbers, fractions, and decimals. Share your findings in paragraph form with examples to support your position:

SOCIAL STUDIES: **Continents**

KNOWLEDGE (10 points) List the continents.

COMPREHENSION (10 points) Put the continents in alphabetical order. Then rearrange your list of continents according to size (square miles) from smallest to largest.

APPLICATION (15 points). Classify the continents according to eastern and western hemispheres and then southern and northern hemispheres.

ANALYSIS (15 points). Compare and contrast any two continents. Consider climate, population, terrain, and natural resources.

SYNTHESIS (25 points). Invent a new continent. Briefly describe its location, its population, its major resources, and its geography.

EVALUATION (25 points). Which continent would you most like to visit? Rank order the continents from your first to your last choices. Give at least three reasons for both your first and your last choices.

ENGLISH: **Short Story**

KNOWLEDGE (10 points). Record the title, author, and setting of this short story.

COMPREHENSION (10 points). Describe the main character of the short story.

APPLCATION (15 points). Draw a picture of a scene representing the climax of the story. Do this on a separate piece of drawing paper.

ANALYSIS (15 points). Diagram the major plot steps of the story in chronological order placing the events on the stair diagram below.

SYNTHESIS (25 points). Rewrite the ending of the story in a summary paragraph.

EVALUATION (25 points). Would the main character of the story make a good friend for you? List your criteria for friendship and validate your position.

Bloom Construction Test Format

SCIENCE: Light and Color

DIRECTIONS: Select any combination of questions to total 100 points. As you choose each question, keep a running total of your points in the margin of the page. Write your answers on a separate piece of paper.

KNOWLEDGE (5 points each)

___ 1. What is light?
___ 2. How does light travel?
___ 3. Where does light come from?
___ 4. How is light reflected?
___ 5. How can light be bent?
___ 6. How does a lens work?
___ 7. How do we see?
___ 8. Why do objects have different colors?

COMPREHENSION (10 points each)

___ 1. Describe two sources of light and how light travels from a source.
___ 2. Explain what happens when light strikes different surfaces.
___ 3. Give examples of some practical uses for different kinds of mirrors and lenses.
___ 4. In your own words, tell how the human eye works.
___ 5. Summarize why objects have different colors.
___ 6. Tell why scientists describe light as both particle-like and wave-like.

APPLICATION (15 points each)

___ 1. Construct a color wheel
___ 2. Demonstrate the use of a prism.
___ 3. Experiment to find out how many different colors you can create by mixing two or more of these four colors: blue, red, yellow, black. Record your results.
___ 4. Construct a diagram of the eye.
___ 5. Generalize why the sky often looks blue.
___ 6. Discuss two new ways of using light to benefit people.

ANALYSIS (20 points each)

___ 1. Compare the shape and function of a convex lens and a concave lens.
___ 2. Distinguish between the color of an opaque vs. a transparent object.
___ 3. Compare various methods of producing light.
___ 4. Distinguish among absorption, reflection, and transmission of light.
___ 5. Some objects are given certain colors for reasons other than looks. Explain why roadways are usually black or gray, while clothing worn for sports, such as tennis, is often white.
___ 6. Draw conclusions as to how shadows are formed.

SYNTHESIS (25 points each)

___ 1. Design a coat of arms for your family using the following chart of color meanings:

yellow - honor, loyalty
black- grief, sorrow
red - bravery
orange - strength
green- hope
brown - flexibility
white - faith, purity
blue - sincerity
purple - royalty

___ 2. Use your imagination and/or life experiences to point out or uncover something
A. With at least three shades of one color
B. That is useless without its color
C. Requiring color coordination with other objects
D. Whose color changes with temperature
E. Where color is a clue to its age or condition

___ 3. Create a diamante, haiku, tanka, or limerick about a rainbow, a prism, a mirror, or a shadow.

___ 4. What would happen if everything were the same color? List ten different effects.

___ 5. What would happen if we lived in a world with no sunlight, only artificial light. List ten different effects.

___ 6. Create an original drawing to demonstrate an important concept you have learned about light.

EVAULATION (25 points each)

___ 1. Artists use color to "speak," and poets use color to paint visual word pictures. Scientists view color as something that is partially in the object, partially in the light, and partially in the eye. Determine how three people in different professions can view color very differently. Support your response with examples.

___ 2. List five important facts you learned about light and color. Rank-order these facts from the most important to the least important fact. Give three-five reasons for your first place choice.

___ 3. Which of the careers listed below do you think requires the greatest understanding of light and color principles? Give three-five reasons for your first choice and list five facts he/she would need to know about light and color.

Optometrist
Fashion Designer
Photographer
Eye Glass Manufacturer

Pre-Test

1. KNOWLEDGE (10 points) Define validity and reliability.

Reliability_____

_____

Validity _____

_____

2. COMPREHENSION (10 points) Describe the major purpose of an achievement test and an intelligence test

Achievement Test_____

_____

Intelligence Test_____

_____

3. APPLICATION (15 points) Construct a multiple choice question, a true/false question, and a matching question on a topic of your choice. Be sure they follow good test construction guidelines.

Multiple Choice Question_____

_____

True/False Question_____

_____

Matching Question_____

_____

4. ANALYSIS (15 points) Compare and contrast norm-referenced tests with criterion-referenced tests.

_____

_____

5. SYNTHESIS (25 points) Design a Test Pep-Rally to motivate students in your school to do their best during State Assessment Testing Week. Be creative and positive in developing your plans. Use additional pages as needed.

_____

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6. EVALUATION (25 points) Choose one of these statements to defend or negate using a series of arguments to clarify your position.

Option One: *There should be a moratorium on all tests and grades in our school for three years.*

Option Two: *All teachers should be required to take a comprehensive test, prepared by the students, on what the students know.*

IV. Audience Participation Reports

The ultimate in quality discussions or questioning sessions is achieved when students rather than teachers are on center stage facilitating the learning activity. One effective way to do this is through student-led and student-generated "Audience Participation Reports." Study this overview which defines this concept and describes six types of reports. Then share these formats with students and have six students plan and deliver information on a topic using one of these formats. After deciding on the format they will use, students will need to prepare the required prop, whether it be an outline, a list of major points, a collection of completed file cards, a desired conclusion/summary/explanation, a series of three questions, or a set of bingo cards.

Interactive Reports

Interactive reports that require some audience participation present information for students to remember in small and manageable chunks. These reports require audience participation in the form of questions, comments, or feedback as opposed to one-way talks which are preplanned and where audience participation is very limited or nonexistent. There are six different types of interactive reports:

1. **The outline report.** Audience members are given an outline of the information to be presented in the report (that has been prepared ahead of time). The reporting student talks for five minutes and then divides the audience into small groups. Each group is given two minutes to answer a question, a point to ponder, or a topic for dialogue related to the report. The reporting student then reconvenes the audience for another five minutes and addresses the assigned question/point/problem in the talk.

2. **The guided report.** Audience members are given a list of three to five major points to be covered in the report. They are then asked to listen without taking any notes. At the end of the report, students are given time to write down all the information they can recall as individuals. Students then work with a partner, and together they combine their notes to reflect the report's content. The reporting student then is given time to fill in any gaps through a large group review.

3. **The responsive report.** The reporting student decides on a topic for his/her report. Each class member is then given a 3 x 5 file card and is asked to write down an important question on the designated topic. The reporting student researches his/her topic and uses the questions on the file cards as the basis for giving the report.

4. **The demonstration report.** In this format, the reporting student prepares a five- to ten-minute talk that involves an active demonstration, experiment, or hands-on application related to the topic. Audience members respond by writing a conclusion, summary, or brief explanation of what happened and what they observed.

5. **The think/write/discuss report.** The student prepares three questions to ask students throughout his/her report. The first question is a motivational question that is given before the report begins. The second question is given during the middle of the report and requires the audience member to write a short response to clarify a point or concept presented in the report. The third question is given at the end of the report and is a feedback-type question about something learned, something that needs further clarification, or something misunderstood.

6. **The bingo report.** The student prepares a bingo grid and in each cell puts a key idea to be discussed in the report. As audience members hear the idea discussed during the report, they cover the appropriate space with a marker. The first person to get the cells completed across, down, or on a diagonal shouts "bingo" and wins that round. A "cover all" round is often used.

To assess the effectiveness of their Audience Participation Report each of the six students should collect the papers, questions, summaries, notes, conclusions/summaries/explanations, or bingo cards from all members of the audience and analyze them to determine how successful the student was in teaching others something about the topic. General class discussion might follow as the techniques are contrasted and evaluated.

V. Reflecting on Lessons Learned

Use four or five of the suggested prompts listed below to record your experiences with the contents of this staff development kit and how you might apply what you have learned. Record your responses on a separate piece of paper for inclusion in the portfolio/journal.

1. After completing this kit, some questions I still have about discussion/questioning tools and techniques are. . . and ways I plan to find answers to my questions include. . .

2. I can best use the information in this kit by. . .

3. One new thing about discussion/questioning tools and techniques that I learned and was impressed with . . .

4. Some concerns I have about the use of these on a regular basis are. . .

5. The students in my class who would benefit most from these tools and techniques would be. . .

6. The students in my class who would benefit least from them would be. . .

7. In applying the kit's tools and techniques in the classroom, the easiest things for me to do were. . .

8. Some advice I would give to other teachers trying varied discussion/questioning tools and techniques structures in the classroom would be. . .

9. Something I learned about discussion/questioning tools and techniques which surprised me was. . .

10. Some ways I might use some of those tools and techniques outside of the classroom might be. . .

VI. A Post-Test

Complete this written post-test based on Bloom's Taxonomy after working through the set of activities on discussion and questioning tools and techniques for middle level classrooms. Note that there is a separate question at each level for discussion and questioning content. If working as a team, each individual should complete the test and then follow up with discussion about the answers and how the team will utilize the various techniques in the future.

KNOWLEDGE LEVEL TASK

1. Write down at least three reasons why classroom discussions are important in the middle level classroom.
2. Record at least five different types of questions from Riegle's Classification System.

COMPREHENSION LEVEL TASK

1. Explain how discussions can best be conducted to encourage more productive student responses.
2. Describe how questioning techniques can help develop the students' ability to think at higher levels of the taxonomy.

ANALYSIS LEVEL TASK

1. Determine what are the Do's and Don'ts for leading effective group discussions.
2. Infer how a monthly use of the A.M.I. (Activity Mindset Inventory) might improve a teacher's effectiveness in asking or constructing better questions for an in-class or homework assignment.

SYNTHESIS LEVEL TASK

1. Compose a newsletter article, letter, or flyer directed at parents that shows them how to facilitate better discussions on family-related or school-related issues at home.
2. Compose a newsletter article, letter, or flyer directed at parents that shows them how to use Bloom's Taxonomy as a tool for asking higher order questions on family-related or school-related issues at home.

EVALUATION LEVEL TASK

1. Defend or negate this statement: *Small and large group discussions are one of the most important delivery systems for teaching concepts and skills in today's classroom.*
2. Defend or negate this statement: *There is both 'an art and a science' to the asking of quality questions in today's classroom.*

VII. Resources for School-Based Staff Development

Staff Development Kits

Implementing the Middle School Concept: Middle School 101
(52 pages plus one copy of *This We Believe: Developmentally Responsive Middle Level Schools*. Order #1265 Retail: $20.00. NMSA member: $16.00.)

How To Improve Discussion and Questioning Practices: Tools and Techniques
(74 pages. Order #1302 Retail:$ 20.00.NMSA member:$16.00.)

Audiotapes

*As **I See It*** by John Lounsbury. Order # V109

The Power of a Teacher by Richard Ramsey. Order #V110

Perspectives on Academic Achievement by Howard Johnston. Order #V111

Partner Teaming: Wave of the Future by Chris Stevenson. Order #V112

(Retail – each tape: $15.00. NMSA member $12.00
Set of four – Retail: $50.00. NMSA member $40.00)

Professional Books

The following NMSA publications are particularly suited for use in local staff development activities. Practical, proven in the classroom, these resources provide sound rationale, many examples, and guidance for implementation.

Authentic Assessment Using Product, Performance, and Portfolio Measures from A to Z by Sandra Schurr. Unique and engaging ways for students to demonstrate their learning.
(120 pages, Order #1261. Retail: $24.00, NMSA member: $19.20)

Prescriptions for Success in Heterogeneous Classrooms by Sandra Schurr. Classroom-tested and creative ways to ensure effective learning with diverse learners.
(194 pages, Order #1222. Retail: $24.00, NMSA member: $19.20)

Signaling Student Success: Thematic Learning Stations and Integrated Units by Sandra Schurr, Sharen Lewis, Kathy LaMorte, and Kathy Shewey. Turn your classroom into an environment in which students are engaged in truly interdisciplinary studies.

(368 pages, Order #1236. Retail: $32.00, NMSA member: $25.60)

Dynamite in the Classroom: A How-To Handbook for Teachers by Sandra Schurr. Teachers love this imaginative presentation of unique ways to improve instruction.

(207 pages, Order #1901. Retail: $20.00, NMSA member: $16.00)

The ABCs of Evaluation: 26 Alternative Ways to Assess Student Progress by Sandra Schurr. A long-standing best seller that offers alternatives to paper and pencil tests.

(232 pages, Order #1200. Retail: $28.00, NMSA member: $22.40)

Portfolio Assessment: A Handbook for Middle Level Teachers by Keith Lustig. A direct presentation of how a classroom teacher successfully implemented a portfolio assessment system.

(88 pages, Order # 1235. Retail: $18.00, NMSA member: $14.40)

Using Portfolios Across the Curriculum edited by Ann Lockledge and Judith Hayn. Classroom-proven ideas for using portfolios in a variety of ways across the curriculum in major subject areas and in advisory.

(104 pages, Order #1264. Retail: $15.00, NMSA member: $12.00)

Camel-Makers: Building Effective Teacher Teams Together by Daniel Kain. An effective instrument that will help a team examine its procedures and processes and ensure a team's effectiveness.

(120 pages, Order #1251. Retail: $20.00, NMSA member: $16.00)

Starting Points: How to Set Up and Run a Writing Workshop – and Much More by Dan Rothermel. Detailed descriptions of a writing workshop based on Nancie Atwell's highly regarded work.

(108 pages, Order #1233. Retail: $18.00, NMSA member: $14.40)

A School-Wide Approach to Student-Led Conferences: A Practitioner's Guide by Patti Kinney, Mary Beth Munroe, and Pam Sessions. A step-by-step approach to implementing student-led conferences with implications for student achievement and parental involvement.

(128 pages, Order #1301. Retail: $18.00, NMSA member: $14.40)

The Watershed Whole-Learning Activities Book by Mark Springer. A companion to the inspirational *Watershed: A Successful Voyage Into Integrative Learning*. Plans and procedures for conducting such projects as "Hanging Timeline" and "Rock Concerts" that engage students fully and increase their achievement.
(128 pages. Order #1253. Retail: $19.00. NMSA member: $15.20)

Student-Oriented Curriculum: Asking the Right Questions by Wallace Alexander with Dennis Carr and Kathy McAvoy. A powerful case for actively involving students in all aspects of the teaching and learning process.
(88 pages. Order #1224. Retail: $14.00. NMSA member: $11.20)

Homework: A New Direction by Neila Connors. With this resource, its research and suggestions, a faculty can attack the homework dilemma and develop a school-wide plan to help resolve this ever-present concern.
(92 pages. Order #1105. Retail: $15.00. NMSA member: $12.00)

Advisory: Definitions, Descriptions, Decisions, Directions by John Galassi, Suzanne Gulledge, and Nancy Cox. Defines advisory programs by rationale and offers a hands-on activity to assist a faculty in developing the right program for its school.
(82 pages. Order #1257. Retail: $15.00. NMSA member: $12.00)

National Middle School Association,
4151 Executive Parkway, Suite 300, Westerville, Ohio, 43081.
1-800-528-NMSA, FAX (614) 895-4750

National Middle School Association

National Middle School Association, established in 1973, is the voice for professionals and others interested in the education and well-being of young adolescents. The association has grown rapidly and enrolls members in all 50 states, the Canadian provinces, and 42 other nations. In addition, 56 state, regional, and provincial middle school associations are official affiliates of NMSA.

NMSA is the only association dedicated exclusively to the education, development, and growth of young adolescents. Membership is open to all. While middle level teachers and administrators make up the bulk of the membership, central office personnel, college and university faculty, state department officials, other professionals, parents, and lay citizens are members and active in supporting our single mission – improving the educational experiences of 10-15 year olds. This open and diverse membership is a particular strength of NMSA's.

The association publishes *Middle School Journal*, the movement's premier professional journal; *Research in Middle Level Education; Middle Ground, the Magazine of Middle Level Education; Target*, the association's newsletter; *The Family Connection*, a newsletter for families; *Classroom Connections*, a practical quarterly resource; and a series of research summaries.

A leading publisher of professional books and monographs in the field of middle level education, NMSA provide resources both for understanding and advancing various aspects of the middle school concept and for assisting classroom teachers in planning for instruction. More than 70 NMSA publications are available through the resource catalog as well as selected titles published by other organizations.

The association's highly acclaimed annual conference, which has drawn approximately 10,000 registrants in recent years, is held in the fall. NMSA also sponsors an annual urban education conference and a number of weekend workshops and institutes.

For information about NMSA and its many services contact the association's headquarters at 4151 Executive Parkway, Suite 300, Westerville, Ohio, 43081. TELEPHONE: 800-528-NMSA; FAX: 614-895-4750; INTERNET: www.nmsa.org.

Sandra Schurr has prepared yet another NMSA resource for middle level educators, this time the second in the new series of staff development kits. Dr. Schurr, Director of the National Resource Center for Middle Grades Education at the University of South Florida, is a prolific writer known for creating functional, timely, and practical materials for educators. This *Staff Development Kit #2: How to Improve Discussion and Questioning Practices: Tools and Techniques* provides all that a teacher or a team needs to learn and apply many imaginative ways to improve these basic facets of teaching.

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National Middle School Association

NMSA

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